



December 2012

## National Operations & Maintenance Specification

**NOTE TO SPEC WRITER: to be filled out by the Region**

SOLICITATION NUMBER: G S - [ ] P - [ ] - [ ] -

SERVICE: OPERATIONAL& MAINTENANCE AND RELATED SERVICES

LOCATION(S):

PERIOD OF PERFORMANCE:

SOLICITATION ISSUE DATE: December 19, 2012

OFFER RECEIPT DATE/TIME: XXXX 00, 2012

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NOTES TO SPEC WRITER  
Please remove this page after reviewing

## **Remove this Section when finished with Statement of Work (SOW)**

### **NOTES TO SPECIFICATION WRITER**

#### **General Instructions**

The specifications listed constitute the minimum standard for Operations and Maintenance services (O&M) for all PBS regions. Regions may include additional or more stringent requirements to meet specific needs relating to providing efficient and effective services to the customers. Additionally, the document has been designed to be flexible and includes editor's notes in *blue* and contained within square brackets "[ ]" to clarify the intent in these Sections.

#### Functional Guidelines:

- Delete and mark "Reserved" (this should be minimal) in both the text and Table of Contents items that are not applicable to the particular site covered under the provisions of this scope.
- Add regional-specific information and additional requirements
- Use care when determining what material should be Contractual and what material should be provided as informational only.
- Do not insert page numbering until you have completed the scope to avoid confusion
- Delete all blue editor's notes and paragraphs when the specifications are finalized.
- Some exhibits are intended for editor and should be deleted before sending to the Contractor.
- Be sure to complete the Building Information Sheet for each building that is covered under the Contract.
- Contractor prices are to include personnel, labor, equipment, tools, supplies, supervision, management, and services, except as may be expressly set forth as Government-furnished, and otherwise to perform and provide the work described in Section C.
- Tenants that delay Contractor access to the space they occupy shall reimburse GSA for the cost of delay. The CO or their designee shall specify in the contract what constitutes timely access to tenant's space.
- Prior to ending out the specifications for Contractor's bid, check with the tenant's occupancy agreement and /or reach out to the appropriate tenant representative (s) to en-

sure the SOW meets the tenant's services requirements. Tenant requirements that exceed the standard services are reimbursable to GSA.

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***NOTE TO SPEC WRITER:** the Contractor is responsible for submitting their annual biobased report using the following web site <https://www.sam.gov/>*

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**The following clauses must be included in all contracts where contractors may require access to sensitive data, or use GSA information technology (IT) resources.**

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Construction Contracts

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A. **SOLICITATION/CONTRACT FORM**

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*A.1. Standard Forms*

**RESERVED**

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## **B. SERVICES, ORDERING AND PRICES**

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### ***B.1. Description of Services***

**RESERVED**

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## **C. DESCRIPTION/SPECIFICATION/STATEMENT OF WORK**

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### ***Introduction***

This is a Performance Based Service Contract and the success of the Contract depends on the satisfaction of the requirements, but also the satisfaction of our shared customer. Rather than a mere list of activities, this is a written expression of the GSA's expectation of the service to be performed by the Contractor. A higher level of effective communication between the Government and Contractor is essential for partnering and for the performance based service contract to succeed. The success of this Contract is shared between the Government and the Contractor.

More emphasis is placed on the Contractor's self-management of quality, not the usual external inspection by Government Inspectors, although that is a part of this Contract as well. All parties should act proactively to reduce service cost, therein providing an incentive for the Contractor.

The Contractor, through innovation, technology, or other means, shall perform the required maintenance of these facilities by following the Guiding Principles for Sustainable Existing Buildings:

#### **I. Employ Integrated Assessment, Operation and Management Principles**

- a. In conjunction with the Contract Officer (CO) or designee establish operational performance goals for energy, water, material use and recycling, and indoor environmental quality, and ensure incorporation of these goals throughout the life of this Contract.
- b. Ensure that operating decisions are carried out with regard to sustainable operations.
- c. Meet ASHRAE standards as noted throughout the SOW for thermal comfort and indoor air quality.
- d. Use low emitting materials Volatile organic compounds (VOC) or other for maintenance. In particular, use products that have low pollutant emissions, adhesives, sealants, and solvents.
- e. Use products meeting or exceeding EPA's recycled content recommendations for building maintenance. For other products such as ceiling tiles, use materials with recycled content. For more information, see EPA's Comprehensive Procurement Guideline website.
- f. Use materials with the highest content level per USDA's bio-based content recommendations for maintenance of or use in the building.
- g. Use environmentally sustainable products that have a lesser or reduced effect on human health and the environment. See the Green Products Compilation.
- h. Provide salvage, reuse and recycling services for waste generated from building operations, maintenance, and repair and discarded equipment.
- i. Eliminate the use of ozone depleting compounds where alternative environmentally sustainable products are available consistent with the Clean Air Act.

II. Optimize Energy Performance – GSA is in the process of optimizing energy performance through advance metering and monthly reporting. Operate all equipment to optimize efficiency to reduce energy use and otherwise seek operating costs reductions wherever possible.

III. Protect and Conserve Water where possible inside and outside. Metering systems may be already installed or will be installed in government buildings to aid in reducing consumption. Where available, use EPA's Water Sense-labeled products or other water conserving products.

IV. Be aware that the building(s) and management involved with this Contract may be in the process of establishing new initiatives, instituting plans, and operational procedures to meet energy efficiency goals either through receiving an ENERGY STAR rating, Smart Building/ GSA link technology, or comparable programs.

The Contractor will play an integral part of obtaining these goals and should be aware of the programs and processes.

V. The purpose of partnering is to adopt procedures wherein the Scope of Work where the Contractor and Government can work together in achieving Contract objectives. Partnering involves the development of a cooperative management team that seeks to identify common goals and objectives.

*[[[If this is not a fixed-price Contract, delete next paragraph]]]*

VI. This is a fixed-price Contract and while working with the Government in obtaining goals the Contractor is motivated to find improved methods of performance in order to increase its profits. Results of an effective partnership should reflect a “mutual win” situation.

### **C.1. SCOPE OF WORK**

**C.1.1** The Contractor shall provide management, supervision, labor, materials, equipment, and supplies and is responsible for the efficient, effective, economical, and satisfactory operation, scheduled and unscheduled maintenance, and repair of equipment and systems located within the property line of the *[[[Insert all covered building names]]]* building(s), to include the following:

*[[[Identify specific equipment or systems to include and exclude from this scope of work. Delete any items not applicable to your building or covered under the requirements of another SOW.]]]*

- a. Electrical systems and equipment.
- b. Mechanical, plumbing, Building Automation System (BAS) where applicable ( where BAS/ ECMS systems are connected to the GSA network, the Contractor’s employees will need to obtain a GSA ENT account to access systems) and heating, ventilation, exhaust systems and air conditioning (HVAC) systems and equipment.
- c. Fire protection and life safety systems and equipment.
- d. All control systems that are within the scope of this Contract. All Building Automation Systems (BAS), Public Address Systems, and Computerized Lighting Systems that are within the scope of this Contract (BAS, and Computerized Lighting Systems software maintenance is excluded).
- e. Architectural and structural systems, fixtures, and equipment within the site (to the property line).
- f. Service request desk operations as identified in Section C.8.4 to include record keeping using a computerized maintenance management system (CMMS) or by other means as well as other administrative functions.
- g. Maintenance of landscape irrigation systems. *[[[Check Contractor responsibility.]]]*
- h. Mechanical equipment for window washing (wall glider, tracks, davits, pedestals and associated equipment). *[[[Check Contractor responsibility.]]]*
- i. Locks, keycard systems, vehicle barrier systems and static and dynamic bollard systems.
- j. Dock levelers and roll-up and sliding garage doors. *[[[Check Contractor responsibility.]]]*
- k. Elevator and vertical transportation systems, including locks and keycard systems
- l. The Contractor shall maintain all fixed equipment and systems, including playground equipment associated with the Child Care Center. The Contractor shall repair systems upon request and according to work items identified by the annual Child Care Center survey. *[[[Check Contractor responsibility.]]]*
- m. Storm drainage systems - reduce storm water pollution by minimizing discharges and runoff to the storm sewer system and environment.
- n. The Contractor shall complete roofing system investigations and repairs.
- o. The Contractor shall maintain and repair U.S. flag pole, lighting and pulley system.
- p. The Contractor shall maintain kitchen/concessions area drains if applicable.

- q. The Contractor shall maintain conveying equipment, parking control equipment, and loading dock equipment.
- r. The Contractor shall update software/firmware to latest revision and update software licenses for BAS

***C.1.2 The Contractor Shall:***

- a. Be responsible to make the management and operational decisions to meet the quality standards required under this contract.
- b. Use innovation, technology and other means and methods to develop and perform the most efficient services for the building.
- c. Implement an effective Quality Control Plan (QCP).
- d. Implement an effective service call system, as specified under the Special Requirements section of this contract that results in prompt, professional, and courteous resolution of tenant concerns.
- e. Keep the Contracting Officer (CO) or designee informed of current status of the work being performed, provide work schedules, provide a major equipment and critical system break down or impairment form, and provide other pertinent information needed by the CO or designee.
- f. Reduce the environmental impacts of work performed under this contract by using, to the maximum extent, environmentally sound practices, processes, and products.
- g. Provide training to their employees that will stress stewardship in maintenance practices i.e., the proper use, disposal, recycling of chemicals, dispensing equipment and packaging. Provide documentation that their employees are completing training in the core competences and participating in continual educational training according to the Federal Building Personnel Training Act. Ensure that their employees are properly licensed and/or certified to operate necessary building systems or equipment for which licensed and/or certified personnel are required by federal, state or local law, codes or ordinances (H.15. Personnel Qualifications).
- h. Federal Requirements: The Contractor shall comply with all applicable Federal, state and local laws, regulations and codes, including any supplements or revisions. The Contractor shall obtain all applicable licenses training, and permits. If a change in law or regulation requires the Contractor to implement an action that will result in an increase or decrease in Contract price, the Contractor shall implement the required action and within 30 calendar days submit to the CO or their designee a price proposal for such change. If the CO or their designee determines an equitable adjustment is substantiated a modification to the Contract will be issued.

***C.1.3 Excluded from this scope are:***

***[[[Remove any items below that are included in this scope and add to list above.]]]***

- a. Security systems (does not include mechanical components of the door ,closers, keepers, hinges, etc.)
- b. Telecommunication systems.
- c. Equipment owned and operated by tenant agencies. ***[[[Provide a list of equipment to Contractor.]]]***
- d. Furnishings (not installed as fixtures).
- e. Paper, soap, and hand-sanitizer dispensing equipment in restrooms.
- f. Kitchen appliances and equipment (but ductwork above the ceiling, grease traps with associated piping, and any fire suppression or fire alarm equipment are included in the scope).
- g. Equipment owned by servicing public utilities.
- h. Upgrade of software and software licenses (to include building automation systems (BAS) and CMMS). ***[[[Edit this language if Contractor is providing CMMS software.]]]***
- i. Fitness center equipment. ***[[[Check Contractor responsibility.]]]***
- j. Lawn sprinklers. ***[[[Check Contractor responsibility.]]]***
- k. Additional services as needed by various agencies

## ***C.2. Definitions***

### ***C.2.1 Acceptance***

“Acceptance” means an authorized representative of the Government has inspected and agreed that the work meets all requirements of this contract, to include documentation requirements.

### ***C.2.2 Acts of God***

These are unanticipated grave natural disasters or other natural phenomenon of an exceptional, inevitable, and irresistible character; the effects of which could not have been prevented or avoided by the exercise of due care or foresight.

### ***C.2.3 Additional Services***

“Additional services” are services that the Contractor will provide at an additional cost to the Government, to include all labor, supervision, supplies and materials specifically identified as being outside the provisions of the basic services and included in the offeror’s overall pricing. The CO or their designee will issue a separate delivery order before work may proceed.

### ***C.2.4 Advanced Meters***

Advanced meters are those that have the capability to measure and record interval data (at least hourly for electricity), and communicate the data to a remote location in a format that can be easily integrated into an advanced metering system.

### ***C.2.5 Advanced Metering Systems***

A system that collects time-differentiated energy usage data from advanced meters via a network system on either an on-request or defined schedule basis. The system is capable of providing usage information on at least a daily basis and can support desired features and functionality related to energy use management, procurement, and operations, U.S. Department of Energy, EERE: Guidance for Electric Metering in Federal Buildings, (February 3, 2006).

### ***C.2.6 Approval***

“Approval” means the Government has reviewed submittals, deliverables, and administrative documents (e.g., insurance certificates, installation schedules, planned utility interruptions, etc.) and has determined the documents conform to contract requirements.

### ***C.2.7 Architectural and Structural***

“Architectural and structural” systems include all building structure, envelope, building improvements and finishes, and site improvements (e.g., paving, walkways, asphalt, etc.) to the property line.

### ***C.2.8 Basic Services***

The Basic Services of the contract consist of the recurring contract requirements for which the Contractor is paid as a base price, i.e., the requirements established by the contract statement of work and related general and administrative requirements that do not contain provisions for separate reimbursement. Indefinite Quantity requirements (Additional Services and Reimbursable Repairs) are requirements outside of Basic Services, for which payment is made on a case-by-case basis.

### ***C.2.9 Building Automation System (BAS)***



The “building automation system” is a system controlling and monitoring building HVAC, and possibly other systems, to include all device, field, and global controllers, instrumentation, networking infrastructure, computers and peripherals, software, programming, database files, and licenses.

#### ***C.2.10 GSA Link***

The GSA Link initiative is one of GSA’s strategic projects. The purpose of this initiative is to leverage automated building analytics technology to measure and substantially lower operational expenses in the existing owned building portfolio. GSA Link is a hardware and software solution to capture real-time building systems point data, apply rules-based analytics software to the data, and spot trends and deficiencies while reporting actionable events to building operators, O&M contractors, and GSA Service Center property managers.

#### ***C.2.11 Building Operating Plan***

The “building operating plan” is a mandatory plan that the Contractor prepares for Government approval that describes the Contractor’s program for operating and maintaining the building, to include both normal circumstances and contingencies.

#### ***C.2.12 Commissioning***

A practice used to optimize and verify performance of fundamental building systems.

#### ***C.2.13 Ongoing Commissioning***

The practice of optimizing system performance by continuing to fine-tune equipment so will result in actively preventing problems for the lifetime of the building. GSA’s Ongoing Commissioning efforts will focus on maintaining the facility in the optimized state resulting from TBC and Re/Retro Commissioning efforts. GSA will achieve this through its relationship with its service providers (Operations and Maintenance/Custodial/Repair and Alterations/IT/Utilities) and the use of technology (networked systems/Advanced Meters/Smart Buildings).

#### ***C.2.14 Computerized Maintenance Management System (CMMS)***

A “computerized maintenance management system” is a database and application software package that automates the O&M and repairs record keeping requirements. A CMMS is designed to enhance efficiency and effectiveness of maintenance activities. Typical features include planning, scheduling and monitoring of work orders and maintenance needs.

The National CMMS (N-CMMS) is a central repository (Database) for all maintainable GSA Assets. The N-CMMS provides a mandatory, Agency-Wide means and method for processing and reporting all maintenance work done for GSA regardless of Region or Contractor.

#### ***C.2.15 Consumable Parts***

“Consumable parts” or components are parts or components that customarily require regular replacement rather than repair in a maintenance program and shall be disposed of properly. Examples include, but are not limited to: oil, grease, belts, filters, ballasts, lamps, etc.

The Contractor is responsible for any consumables (including fuel) used during day-to-day operation of a generator, i.e., exercising the generator, testing, etc. Operation of a generator for an extended period or due to a power loss would be treated as a reimbursable expense. If the operation of the generator is caused by Contractor negligence, the Contractor shall be liable for the full cost of refueling, any other provisions notwithstanding

#### ***C.2.16 Contracting Officer (CO)***

Contracting Officer (CO) has the overall responsibility for the administration of this contract. The CO alone, without delegation, is authorized to take actions on behalf of the Government to amend, modify or deviate

from the contract terms, conditions, requirements, specifications, details and/or delivery schedules. However, the CO may delegate certain other responsibilities to authorized Government representatives.

***C.2.17 Contracting Officer's Representative (COR) or Designee***

Contracting Officer's Representatives (COR) or their designee shall be appointed by letter from the CO. CORs or designees will be the primary Government representatives for the administration of Contract, shall have proper training and experience in inspecting contracts, but will not have the authority to modify the contract.

***C.2.18 Contractor***

“Contractor” as used in this document refers to the company or firm awarded this contract.

***C.2.19 Contractor's Other Than Normal Working/Duty Hours***

Hours other than those identified as Normal Working Hours.

***C.2.20 Controls and Control System***

A “control system” is any low-voltage control, communication and monitoring system, including but not limited to stand alone devices, field and global controllers; instrumentation; networking infrastructure; computers and peripherals; software; programming; database files; and licenses. Examples are the BAS, Advance Metering System (AMS), and lighting control systems. Fire protection systems and security systems are excluded from this definition for purposes of this contract and are defined separately. Gateway devices and mapping software and files for data interchange between a control system and a fire protection or security system are considered part of the control system.

***C.2.21 Defective Service***

A unit of service that does not conform with specified contract requirements.

***C.2.22 Emergency***

The term “Emergency” includes bombings, and bomb threats, civil disturbances, fires, explosions, electrical failure, loss of water pressure, building flooding, sanitary and sewer line stoppage, chemical and gas leaks, medical emergencies, hurricanes, tornadoes, floods, and earthquakes. The term does not apply to civil defense matters such as potential or actual enemy attacks.

***C.2.23 Emergency Callback***

An “emergency callback” is a service request or other request for service placed outside of normal working hours and of such a nature that response cannot wait for the resumption of the next day's normal working hours.

***C.2.24 Environmentally Sustainable***

Products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, products and chemicals, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service. Attributes of environmentally sustainable products include those that are energy efficient, water-efficient, biodegradable, environmentally preferable, non-ozone depleting, contain recycle content, non or less toxic, EPA-designated and biobased.

***C.2.25 Existing Deficiency List Report***

The “existing deficiency list report” or “existing deficiency list” is a list of deficiencies that may exist in the equipment and systems covered by this performance work statement, as well as the Contractor's itemized price (including, but not limited to, labor, materials, overhead, and profit) for correcting each deficiency.

### ***C.2.26 Exterior***

This includes entrances; landings; steps; sidewalks; parking areas; arcades; courts; planters; lawns; irrigation systems; fountains; security bollards; gates; fences; flagpoles; building-mounted, pole, and ground lighting; etc. located adjacent to the facility extending to the legal property line.

### ***C.2.27 Federal Holidays***

“Federal holidays” for the purposes of this contract are New Year’s Day, Martin Luther King Day, President’s Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans’ Day, Thanksgiving Day, and Christmas Day. When Federal holidays fall on weekends, a weekday is typically designated as the holiday. Holidays that fall on Saturday are observed on the previous Friday and holidays that fall on a Sunday are observed on the following Monday. Veterans’ Day is always on the 11<sup>th</sup> of November and Thanksgiving is always the 3<sup>rd</sup> Thursday of November.

### ***C.2.28 Federal Executive Holidays, Unanticipated***

Unanticipated holidays declared by the president will count as Federal holidays. As long as the Contractor pays employees as if it were an anticipated Federal holiday, the Contractor will be paid for the unanticipated holiday as if it were a normal Federal Holiday.

### ***C.2.29 Fire Protection and Life Safety Systems***

“Fire protection and life safety systems “ are systems and equipment installed in the building to (1) detect fire and products of combustion, (2) notify building occupants and emergency responders, (3) initiate smoke control systems (4) initiate fire suppression systems, (5) control or suppress fires and (6) facilitate or enhance emergency egress. These systems also may communicate with other major building systems for fire and smoke control, elevator recall, and utilities control. Life safety systems and equipment includes emergency lighting, exit signage, special egress door locking arrangements, and exit stair markings.

### ***C.2.30 Guiding Principles for Sustainable Existing Buildings***

A practice of using processes that is environmentally responsible and resource-efficient throughout a building's life-cycle. The goal is to minimize and offset consumption of energy, water, and other resources and to eliminate all waste and pollution in building operations and activities. The result is to reduce the environmental impact of the Federal government, which will expand and complement the building design economy, utility, durability, and comfort. The common objective is to reduce the overall impact of the building environment on human health and the natural environment by:

- a. Improving energy efficiency and reductions in greenhouse gas emissions.
- b. Reducing water consumption intensity.
- c. Acquiring green products and services.
- d. Implementing pollution prevention measure, including reduction or elimination of the use of toxic and hazardous chemicals and materials.
- e. Implementing cost-effective waste prevention and recycling programs.
- f. Increasing diversion of solid waste.

### ***C.2.31 GSA Green Purchasing Program (GPP)***

The GPP specifies requirements to promote the purchase of environmentally sustainable products and services. Key Sustainable Product (KSP) Standards are those categories of products that the Government’s Contractor uses most frequently in the delivery of operations and maintenance facilities related services. The KSP standards are the minimal attributes that the KSPs shall meet. Use of the KSP’s in this contract is mandatory.

#### ***C.2.32 Indefinite Quantity***

“Indefinite quantity” provisions permit the Government to order work, in addition to the basic services, and upon acceptance permit additional payment to the Contractor.

#### ***C.2.33 Maintenance Repair***

Work required preventing a breakdown of a piece of equipment or system, or put equipment or systems back in service after a breakdown or failure.

#### ***C.2.34 Miscellaneous Work***

“Miscellaneous work” is additional labor that is performed at the request of the agency at no additional cost to the Government (i.e., they are part of basic services). The Contractor may also have to provide consumable materials to complete the request. Miscellaneous work is treated as a Service Call and is included in the Basic Operations and Maintenance price quoted per month on the bid sheet. During normal duty hours minor tasks related to routine, day-to-day operational requirements requested by the which will consist of, but not be limited to: making door keys; changing locks; hanging pictures, maps and bulletin boards; trimming door bases; and other similar functions as directed. Miscellaneous work shall be accomplished in the same time frame as routine service calls unless otherwise directed by the CO or designee. The Contractor will be paid at the hourly rate quoted for after normal duty hours only if authorized by the CO or their designee in advance for specific activities.

#### ***C.2.35 Modification of Contract***

Modification is a bilateral or unilateral change in the terms of a contract.

#### ***C.2.36 Negligence***

“Negligence” is the failure to use due care under the circumstances. It is the doing of some act which a person of ordinary prudence would not have done under similar circumstances or failure to do what a person of ordinary prudence would have done under similar circumstances.

#### ***C.2.37 Non-Reimbursable Repair***

A “non-reimbursable repair” is a repair that is the Contractor’s responsibility with no additional reimbursement from the Government.

#### ***C.2.38 Normal Working Hours***

“Normal working hours” is the hours of building operations under most circumstances when all services shall be provided to all occupants.

#### ***C.2.39 Occupant Emergency Plan (OEP)***

The lead agency in each building is responsible for development and enforcement of the building’s “Occupant Emergency Plan” (OEP). The OEP details what the building tenants shall do in case of an emergency. The plan identifies floor wardens, shelter in place locations etc.

#### ***C.2.40 Open Systems***

An “open systems” solution is based on industry standard open protocols. This environment and solution is typically designed, procured, installed and maintained in a manner that provides the building owner with as many competitive configuration options as possible while maintaining the integrity of the supported manufacture system. The solution must be procured and installed so that the result delivers device level interoperability amongst different manufactures residing on a common network. In addition, the solution must

be maintained with no future need for the original (installing) contractor. Additions, modifications, and retrofits can easily, without significant additional cost, be made to the system without dependence on the original installing contractor nor require substantial engineering or other technical development. Contractors shall specify Open Systems solutions where feasible and reasonably possible.

#### ***C.2.41 Operations***

“Operations” is the continual process of using building equipment systems to accomplish their function, optimize building performance, and improve energy efficiency. Operations includes analysis of requirements and systems capabilities, operating controls and control systems, responding to service requests, touring and observing equipment performance and condition, adjusting equipment, identifying needed maintenance and repairs to equipment, and maintaining lubrication and chemical treatments, etc.

#### ***C.2.42 Performance Based Service Contracting***

The procurement strategy that seeks to issue technical requirements that set forth outcomes for performance instead of specific requirements on how to perform the service. This strategy shifts the risk of performance to the Contractor by allowing the Contractor to design the methods of achieving desired results as defined by the performance quality standards established by the Government.

#### ***C.2.43 Performance Work Statement (PWS)***

The Performance Work Statement details the work requirement and can be referred to as the specification.

#### ***C.2.44 Predictive Maintenance***

“Predictive maintenance” is a program of maintenance activities in which scheduling of maintenance derives from monitoring the operating condition, or changes in the operating condition, of equipment being maintained.

#### ***C.2.45 Preventive Maintenance (Scheduled and Unscheduled)***

“Scheduled preventive maintenance” is a program of maintenance activities performed based on a fixed schedule or on equipment runtimes. “Unscheduled preventive maintenance” is all work performed including adjustments and procedures necessary to sustain the proper operation of all building equipment and systems pending a scheduled procedure.

#### ***C.2.46 Product Preference (See Exhibit 4 Summary of Environmentally Sustainable Product Attributes)***

Use of “environmentally sustainable” products is mandatory for performance of this contract. As such, products identified as “environmentally sustainable” will be selected over those which do not carry such designations. The following factors should be considered when selecting products: environmental performance, cost performance, bio-based, recycled content, biodegradability, technical performance, and availability.

#### ***C.2.47 Quality Assurance Surveillance Plan (QASP)***

The QASP is the Government’s surveillance method of monitoring and evaluating the Contractor's performance under a Performance Based Statement of Work (PBSOW).

#### ***C.2.48 Quality Control Plan***

The “quality control plan” (QCP), is the Contractor’s complete written system for identifying and correcting deficiencies in the quality of services before the level of performance becomes unacceptable. Preparation of this document is the responsibility of the Contractor.

#### ***C.2.49 Repair***

A “repair” is an act of restoring inoperable, dysfunctional or deteriorated equipment, systems, or material to a fully functional, non-deteriorated state. Repairs usually involve some combination of labor and replacement parts, components or materials.

#### ***C.2.50 Reimbursable Repair***

A “reimbursable repair” is a repair that is reimbursable to the Contractor, in whole or in part, in accordance with the provisions in this document.

#### ***C.2.51 Sequence of Operations***

A “sequence of operations” is the control logic used to operate a system normally put into effect through a control program.

#### ***C.2.52 Service Request***

A “service request” is a response to a GSA, tenant, or agency request or a response to an observation that some equipment, system or material covered by the contract is inoperable, dysfunctional, deteriorated, or not within normal operating parameters, or that performance standard of the contract is not being met. Service request response involves analysis of the problem and adjustment of operating or monitoring controls or other immediate corrective action. A requirement to perform a repair may result from the analysis stage of a service request. Service requests may be generated automatically from interfaces to BAS or diagnostic software.

#### ***C.2.53 Standard Services***

Standard services are defined as all services that are included in the monthly price or as defined in the Contract document. Prices are to include all applicable labor, materials, supplies, training/certifications, equipment (except as otherwise provided), supervision, and management.

#### ***C.2.54 Stewardship***

The act of stewardship is to take the responsibility for managing, conducting or supervising the quality, state or condition of a commercial building. A Stewardship program in addition to caring for the building, its occupants and visitors includes among other things a sense of shared responsibility, occupant participation and communications amongst building management, O&M personnel, cleaning personnel, occupants, contractors and others who have an impact on/in the building.

#### ***C.2.55 Supervisor, On-site***

The term “on-site supervisor” means a person designated in writing by the Contractor who has authority to act for the contract on a day-to-day basis at the work site.

#### ***C.2.56 Tour***

A “tour” is generally a scheduled walkthrough of equipment rooms and installations including computer rooms, restrooms, etc. by Contractor operating personnel for the purpose of ensuring that equipment is running properly, ensuring that equipment rooms are in good order and without safety hazards, and making any necessary adjustments to operating controls or to lubricate equipment. A tour may also involve a combination of such physical visits in addition to using automated systems for the monitoring of equipment and systems. Equipment log sheets are a part of the tour plan/program. All tours are “inspection” work orders in the CMMS and will comply with all work order requirements,

#### ***C.2.57 Vertical Transportation Systems***

“Vertical transportation systems” include elevators, escalators, dumbwaiters, lifts, etc.

#### ***C.2.58 Watch***

A “watch” involves performing certain tasks required for the operation of the HVAC equipment (central systems over 300 tons), boilers, compressors, and related equipment in a centralized location. Watches include, but are not limited to starting equipment, checking at designated intervals all operating equipment in the area, recording readings, shifting equipment and loads, making adjustments at the central control center, taking water samples, making tests, and adding chemicals as required.

### ***C.3. References***

The following publications are incorporated by reference as setting quality, performance, and design standards for work required in this document. Unless a specific date is provided, references are for the current edition published at the time of issue of the solicitation, to include any addenda or errata published by the issuing organization. The Contractor is responsible for obtaining access to all referenced documents at their own expense, the exception of the Public Building Service Operations and Maintenance standards 2012, the Facilities Standards for the Public Buildings Service (PBS P100), and the U.S. Courts Design Guide, which will be provided by the Government.

***[[[Regions shall add or delete references as applicable to their location. Indicate whether the publications will be provided by the region or if they are available via Web site.]]]]***

- Public Buildings Service Operations and Maintenance Standards 2012
- Facilities Standards for the Public Buildings Service (PBS P100)
- U.S. Courts Design Guide
- SMACNA Sheet Metal and Air Conditioning Contractors National Association HVAC Systems Testing, Adjusting & Balancing
- AHERA Asbestos Hazard Emergency Response Act
- ASHRAE Guideline 1 HVAC Commissioning Process
- ASHRAE Guideline 4 Preparation of Operating and Maintenance Documentation for Building Systems
- ANSI/ASHRAE Standard 15 Safety Code for Mechanical Refrigeration
- ANSI/ASHRAE Standard 34 Number Designation and Safety Classification of Refrigerants
- ANSI/ASHRAE Standard 55, Thermal Environmental Conditions for Human Occupancy
- ANSI/ASHRAE Standard 62, Ventilation for Acceptable Indoor Air Quality
- ANSI/ASHRAE Standard 100, Energy Conservation in Existing Buildings/Commercial
- ANSI/ASHRAE Standard 111, Practices for Measurement, Testing, Adjusting, and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems;
- American Society of Mechanical Engineers ASME A17.1/CSA B44, Safety Code for Elevators and Escalators
- American Society of Mechanical Engineers ASME A17.2, Inspector’s Manual for Elevators
- ASME Boiler and Pressure Vessel Code
- ASME CSD-1 Control and Safety Devices of Automatically Fired Boilers
- National Board of Boiler and Pressure Vessel Inspectors, National Board Inspection Code
- OSHA 29 CFR 1910 and 29 CFR 1926
- Clean Air Act
- Clean Water Act
- EPA Green Book
- EPA Purple Book
- GSA SEMS Sustainable Environmental Management System (GSA.GOV/SEMS)
- International Building Code
- International Fire Code
- International Plumbing Code
- International Mechanical Code
- NETA Maintenance Testing Specification for Electrical Power Distribution Equipment and Systems

- NFPA 10, Standard for Portable Fire Extinguishers
- NFPA 12, Standard on Carbon Dioxide Extinguishing Systems
- NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems
- NFPA 13, Standard for the Installation of Sprinkler Systems
- NFPA 14, Standard for the Installation of Standpipe and Hose Systems
- NFPA 17, Standard for Dry Chemical Extinguishing Systems
- NFPA 17A, Standard for Wet Chemical Extinguishing Systems
- NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection
- NFPA 22, Standard for Water Tanks for Private Fire Protection
- NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances
- NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
- NFPA 70, National Electrical Code (NEC)
- NFPA 70E, Standard for Electrical Safety in the Workplace
- NFPA 72, National Fire Alarm and Signaling Code
- NFPA 85, Boiler and Combustible Systems Hazards Code
- NFPA 92, Standard for Smoke Control Systems
- NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
- NFPA 101, Life Safety Code
- NFPA 105, Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives
- NFPA 110, Standard for Emergency and Standby Power Systems
- NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems
- NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems
- NICET (National Institute for Certification in Engineering Technologies publications and issuances)
- NIOSH (National Institute for Safety and Health publications and issuances)
- DOE/EE-0157, International Performance Measurement and Verification Protocol
- NEMA TP-1, National Electrical Manufacturers Association, Guide for Determining Energy Efficiency for Distribution Transformers
- NEMA MG-1, National Electrical Manufacturers Association, Motors and Generators
- NEMA Application Guide for AC Adjustable Speed Drive Systems
- ANSI/IWCA I-14.1, Window Cleaning Safety Standard
- Safe Drinking Water Act, PL 99-339, as amended
- Title 40 CFR, Part 761, PCBs in Electrical Transformers
- Title 40 CFR, 141.43, Sections A and D, Environmental Protection Agency Safe Drinking Water
- ANSI/ASME A17.1 Safety Code for Elevators and Escalators
- OSHA 29 CFR 1910.1200, 29 CFR 1910.146, 29 CFR 1910.147, 29 CFR 1910.1030, 29 CFR 1910.1001, 29 CFR 1910.178
- Guideline 3-1990 and Addendum, or latest version, FAR 52.223-2, ARI Standard 700-1988, or latest edition, and Appendix A to 40, CFR, Part 82, Subpart F.
- Resource Conservation and Recovery Act
- Toxic Substances Control Act

#### ***C.4. Existing Deficiency Inspection/Initial Deficiency List***

The existing deficiency inspection and list is meant to identify and document all deficiencies that exist in the equipment and systems covered by this performance work statement, but that will not be repaired during



routine preventative maintenance and includes the Contractor's itemized price (including, but not limited to labor, materials, overhead, and profit) for correcting each deficiency. This inspection is required to be documented in the CMMS.

*[[[Regions may alter language in C.4.1 as needed. Regions may choose to allow the Contractor to conduct the existing deficiency inspection without the CO or their designee present. In these instances the following language shall be inserted: "The CO or their designee may defer/approve inspection activities without the presence of a Government representative, subject to adequate documentation of conditions found by the Contractor."]]]]*

**C.4.1 Initial Inspection** The Contractor and the CO or their designee shall make a complete and systematic initial inspection together during the startup or transition phase of the contract that will include all mechanical, electrical, fire protection and life safety systems, environmental systems, including but not limited to USTs and structural storm water best management practices (including drains, oil/water separators, etc.) and utility systems and equipment, windows, doors, and other structural features for which maintenance and repairs are covered by this performance work statement. The purpose of this inspection shall be to discover and list in an existing deficiency list report all deficiencies that may exist in the equipment and systems covered by this performance work statement, as well as the Contractor's itemized price (including, but not limited to labor, materials, overhead, and profit) for correcting each deficiency. The Government may elect to have all or any part of this work performed by the Contractor (at the price or prices quoted), by Government employees, or by other Contractors. The existing deficiency list report shall not include any items that would be replaced, repaired, or adjusted during the performance of normal preventive or predictive maintenance.

**C.4.2 Initial Deficiency List** The Contractor shall submit an initial deficiency list report not later than \_\_\_\_ days *[[[Insert timeframe, recommend 60- 90 days]]]* after award of the Contract to the CO or designee. Any dispute between the Government and the Contractor as to classification of initial deficiency list report items will be resolved under the Disputes Clause in this document. The Contractor's itemized estimates for correcting each deficiency shall remain in effect for \_\_\_\_ days *[[[Insert timeframe]]]* after submission of the initial deficiency list report. Deficiencies discovered after the submission of the initial deficiency list report will not be considered pre-existing for purposes of this Contract, unless equipment is operational and cannot be secured and inspected. Any piece of equipment or system that cannot be inspected shall be highlighted at the beginning of the deficiency list stating why it cannot be secured and inspected. An estimate of when the Contractor reasonably expects to be able to inspect the piece of equipment shall be provided. When an existing deficiency in an item is corrected, the Contractor shall assume full responsibility for the subsequent repair of the item as covered under the terms of this Contract at no additional cost to the Government. Nothing in initial deficiency list clause shall be construed as diminishing the obligations imposed by this Contract upon the Contractor to operate any deficient item (to the extent operable) or to adjust or maintain any such item.

### **C.5. Startup Phase/Transition Phase**

*[[[Regions shall choose either the Startup Phase or Transition Phase Startup language below depending on the appropriate building circumstances. The recommended Startup Phase is 60 – 90 days but may be longer if warranted. If the building is continuing operations rather than a newly completed construction or after being returned to operation after a major recapitalization renovation), use the Transition Phase Startup paragraph. Since the Transition Phase Startup services are performed before the Contract start date, regions shall decide whether they will require the Contractor to factor the cost for this service into their monthly Contract cost, or if they capture this cost as a separate line item in Section B.*

*If there is not an accurate inventory available, then include a separate line item cost in RFP to provide additional time and funds for the Contractor capture a new inventory.*

*The Startup Phase language immediately below is for O&M services following new construction or a major recapitalization renovation project. Regions may decide to separate the costs associated with the Startup Phase as a line item in Section B.]]]*

#### **C.5.1 Startup Phase**

The Contractor shall provide within \_\_\_\_\_ days *[[[Insert timeframe and Section B reference if applicable]]]* of startup services assistance in transitioning between the construction Contractor's temporary operations and the O&M Contractor's initial operations. During this period, the building is expected to be primarily unoccupied except for security personnel and transient GSA, Agency, or Contractor personnel carrying out functions related to completing construction punch lists or in preparation of initial occupancy by tenants. During this period as equipment is accepted by the Government and officially (in writing) turned over to the Contractor for operations, the Contractor shall:

- a. Operate HVAC equipment to maintain conditions sufficient to avoid damage to finishes, especially millwork.
- b. Manage warranties, in cooperation with the construction manager.
- c. Develop the Building Operating Plan.
- d. Assist with commissioning activities (note: commissioning schedules will be made available on request by the CO or designee).
- e. Provide site access and escort to Agency personnel and Contractors as necessary. If such services take more than 20 hours per week then the Contractor will be reimbursed by GSA for the additional time in accordance with the additional services provisions in this document.
- f. Inspect all major or exposed (rooftop – recommend scheduling along with retuning effort, outside, machine room) HVAC equipment for cleanliness, absence of rust, accessibility for maintenance purposes, and other visible problems.
- g. Inspect machine rooms for Occupational Safety and Health Administration (OSHA) compliance.
- h. Complete the building equipment inventory as required in this document, to include all equipment attributes used by the CMMS if applicable and develop a Preventive Maintenance Schedule on equipment inventory.
- i. Inventory any stock of materials and repairs parts provided as part of the construction Contract to the Government for safekeeping.
- j. Identify defects in equipment and systems covered by this Contract that were not previously identified in punch list records and notify the Government of such defects for inclusion in the punch list. If such deficiencies are determined to be out of scope for inclusion in the construction Contractor's punch list, the Contractor shall compile such items in an initial deficiency list report as well as provide an itemized estimate for correcting each deficiency as described in Section C.4., Existing Deficiency Inspection/Initial Deficiency List.
- k. Contractor shall train employees on all equipment operated and maintained by Contractor including new equipment added during construction or renovation. The Contractor shall maintain records of the training and make records available to upon request.
- l. Complete the government-furnished CMMS training.
- m. Complete the Energy and Water Efficiency Use Plan for the upcoming year.

#### **C.5.2 Startup Phase Schedule**

Within \_\_\_\_\_ days *[[[Insert timeframe]]]* of the startup phase, the Contractor shall submit a schedule and staffing plan to the CO or their designee for the startup phase. This plan shall describe, by week, work to be accomplished. At the end of each week during the startup phase, the Contractor shall submit a letter report describing work accomplished during the startup phase.

OR

**C.5.1 Transition Phase Startup** *[[[to check the current Contract for the phase-out period]]]*

The Contractor shall provide within \_\_\_\_\_ days *[[[Insert timeframe]]]* of transition startup services prior to the Contract start date to assist transitioning between Contractors. *[[[Refer to the note above and choose to ask the Contractor to either account for this cost in his monthly Contract amount or to account for this cost via a separate line item in Section B. Adjust Section B if necessary.]]]* The purpose of this phase is to permit a transition that is seamless to the tenants and to assess the condition of the building and incomplete maintenance work at the time of Contractor transition. During this period the Contractor shall:

- a. Revise and submit to the CO or their designee by the end of the startup phase an updated building operating plan.
- b. Inspect the condition of all equipment and systems for which the Contractor will assume responsibility.
- c. Review work order history and equipment inventory information.
- d. Complete the government-furnished CMMS training.
- e. Update the preventive maintenance schedule. The new periodic maintenance schedule shall be based off of the last time PMs were performed.
- f. Develop and submit to the CO or their designee by the end of the startup phase the initial deficiency list report, including an itemized estimate for correcting each deficiency as described in Section C.4., Existing Deficiency Inspection /Initial Deficiency List.
- g. Complete the government-furnished CMMS training.
- h. Complete the Annual Energy and Water Efficiency Report.

**C.5.2 Start up Phase Schedule**

Within the \_\_\_\_\_ *[[[Insert timeframe]]]* of the startup phase the Contractor shall submit a schedule and staffing plan for the startup phase. This plan shall describe, by week, work to be accomplished. At the end of each week during the startup phase the Contractor shall submit a letter report describing work accomplished.

**C.5.3 Adjustments and Corrections** The Contractor shall be responsible for making immediate adjustments or corrections that fall within the scope of routine preventive maintenance required by this Contract at no additional cost to the Government. This includes, but is not limited to: making adjustments to controls; adjusting the BAS software, e.g., correcting set points; reloading programs; restoring equipment being operated manually to automatic operation (this does not include changing established sequences of operation or programming sequences); applying lubricants; cleaning fan housings, fans, coils, dampers, air handling unit (AHU) Sections, and equipment rooms; and replacing consumable parts or components. The Contractor shall identify for the Government all alarm points with originating point identification information (device ID, point number, description), so that the Government, at its discretion, may arrange for automatic generation of work orders from alarm conditions.

**C.6. Phase-out Transition Period**

When the Contract ends, the Contractor shall cooperate with the incoming Contractor during a phase-out period. For planning purposes, the Contractor shall assume a phase-out period of \_\_\_\_\_ days. *[[[Insert timeframe. Note: The number of days shall correlate with the anticipated number of days of the Startup Phase of any follow-on Contract.]]]*

During this phase-out period, the Contractor shall:

- a. Assist the CO or their designee and incoming Contractor for a seamless transition in operations and maintenance with no adverse effect on the building tenants;
- b. Provide GSA and the successor Contractor with access to all records and official documentation (both hard copies and electronic as applicable) required by this Contract;
- c. Provide training to the successor Contractor on methods of accessing and programming the building automation system (BAS) and other control systems; and
- d. Show the successor Contractor where all archived programs and systems literature are maintained. On the last performance day of the Contract, the Contractor shall turn over to the CO or their designee all keys and identification badges or cards.
- e. Coordinate and complete disposal, cleanup, and transfer of all materials according to applicable laws.
- f. Provide all data records (database files, spreadsheets, etc.) relating to building systems, assets, work orders, permits, work activities, etc. to GSA. GSA owns all data compiled under this Contract or ancillary to this Contract.

### ***C.7. Deficiency List Completion and Withholding Of Final Payment***

The Government may create a deficiency list of unmet Contractual requirements at or near the time of termination of the Contract. The Government may employ the services of another Contractor in the development of the list and upon completion provide the Contractor with a copy of work not completed, to include the monetary value the Government has assigned for each item. The Government retains sole discretion over whether to charge the Contractor for the monetary value of the list in whole or in part or to request corrections by the Contractor. If the Government elects to request corrections by the Contractor, the Contractor shall have until the end of the Contract period to perform such corrections and may invoice for funds withheld on acceptance of the corrections by the Government. Nothing in this Section shall be construed to limit the Contractor's liability or restrict the Government from reporting unsatisfactory or problematic performance by the Contractor.

### ***C.8. General and Administrative Requirements***

#### ***C.8.1*** Minimum staffing and ability to contact and communicate with the CO or designee

*[[[Regions shall adjust these requirements as appropriate to their facilities to account for locations where full-time onsite coverage is necessary or small facilities where it is not. Insert a specific form of communication device if required. The project manager and onsite supervisor can be the same person if approved by the CO or designee]]]*

The Contractor shall:

- a. Provide qualified staff and onsite technicians to ensure services are continued without disruption to the tenant. The Contractor must be able to respond immediately to a variety of service requests involving multiple trades, including the operation of building control and energy management systems. Technicians shall be certified and properly licensed to work on buildings systems, where applicable, in accordance with Federal, State, or Local laws, codes, or ordinances. See paragraph H.15 Personnel Qualifications for additional information.

(1) Project Manager - The project manager is a person, designated in writing by the Contractor, who has complete authority to act for the Contractor in every detail during the term of the Contract. The Project Manager shall have the authority to accept notices of deductions, inspection reports and all other correspondence on behalf of the Contractor. The Project Manager's physical location and availability shall be approved by the CO or designee.

(2) Onsite Supervisor - The onsite supervisor is a person, designated in writing by the Contractor, who has complete authority to act for the Contractor on a day-to-day basis at the work site. The onsite supervisor shall have the authority to direct the workforce and the work to be accomplished

under this Contract on behalf of the Contractor. The onsite supervisor's physical location shall be at the work site. When multiple shifts are required, the Contractor shall designate a minimum of one onsite supervisor for each shift. These individuals may be classed as working supervisor if so desired by the Contractor and may perform the functions of mechanic and supervisor concurrently.

- b. Maintain communication with the Government during normal duty hours and after hours for emergencies. (See Section C.8.2, Communication Equipment).
- c. Immediately notify the CO or their designee of any recognized safety hazard that might severely affect the building occupants.
- d. Develop and submit to the CO or their designee within \_\_\_\_\_ days of Contract award *[[[Insert timeframe]]]* a list of key personnel and emergency contact information (which may include subcontractor contacts, as applicable).
- e. Shall have all Contract employees, including subcontractor employees, sign in and out, upon entering or exiting the building using a log established at each building for security and Contract administration purposes.

### ***C.8.2 Communication Equipment***

The Contractor shall provide key operational personnel (managers, supervisors, and duty mechanics) with portable electronic means to communicate with GSA for service requests, emergencies, status of projects, etc. Electronic communication methods may include the following:

- a. Phone/Emails/Text messaging devices. The Contractor is responsible for all costs associated with the text messaging device. Examples are two-way pagers, cell phones with text messaging, BlackBerry, etc.
- b. Fax. Receiving and sending faxes is acceptable as a secondary communication method for locations that have problems with wireless device signal strength. However, delaying faxes because of combined usage of voice and fax on the same line is not acceptable.

### ***C.8.3 Onsite Records***

The Contractor shall ensure that all records required by the Contract, or produced in performance of work under the Contract, are maintained in an organized manner onsite in electronic format and are made available to the Government when requested. The Contractor shall receive, maintain and gather data, as well as other materials including records and manuals, related to the support and operation of Government facilities. The Government retains ownership of all databases, information, and other materials received or developed by the Contractor in support of this Contract at all times.

### ***C.8.4 Service Request and Administrative Support*** *[[[Note to spec writer: when requiring Contractor to implement service call system, include the following information to ensure a smooth transition from one Contractor to the next*

- *Define location*
- *Who is handling the calls*
- *What are the GSA staff's responsibilities in relationship to Contractor*
- *Additional duties*
- *Service Desk hours]]]*

The Contractor shall operate a service request and administrative support function during normal working hours, to act as a central point of contact for the Government and building occupants to take service requests, and track and maintain service request records in the CMMS. This includes service requests for work not under the scope of this Contract (i.e., performing a central service request desk function for the facility, regardless of who is responsible for responding to the service request).

### ***C.8.5 Use of CMMS***



*[[[GSA's goal is to use Government-furnished CMMS systems in all locations as practicable. Currently there is a project to establish a national CMMS in all regions. For those locations not using a CMMS system, a written waiver justifying non-compliance is required to be submitted to the CO or their designee with concurrence from the FMSP Director. The Contractor needs to identify how they intend to track the PMs in an electronic fashion in their justification waiver.]]]*

### **Option A**

*[[[In buildings where the National CMMS is in use, replace government-furnished CMMS with NCMMS]]]*

GSA's goal is to use government-furnished CMMS systems in all locations as practicable. The Contractor shall use the Government-furnished CMMS to include validating and updating the equipment inventory database, including all data fields specified by the CO or designee. The Contractor shall attend the CMMS training provided by the government. Where not previously established, the Contractor shall construct the inventory database. The Contractor shall use the CMMS to identify, control, track, and schedule preventive maintenance work, service requests, and equipment inventory. The Contractor shall track historical maintenance and repair activities for each work order received during the performance of the Contract. All work done by the Contractor shall be accomplished under a CMMS work order. The Contractor shall provide reports to the CO or designee as requested and in a format and media as requested. On a yearly basis, the Contractor will complete a CMMS audit in a format provided by the CO or designee. The Contractor will correct any deficiencies noted on the audit within in a month of receiving the report.

### **Option B**

*[[[Contractors should include a line item price for transition work as reflected in Exhibit J. 16]]]*

The Contractor shall provide all hardware and software to support and maintain an automated database of building maintenance and repair activities using a CMMS. *[[[Regions may insert additional desired features and qualities of the Contractor-provided CMMS hardware and software, although a brand name may not be specified.]]]* The Contractor shall use the CMMS to identify, control, track, and schedule preventive maintenance work, service requests, and equipment inventory. The Contractor shall track historical maintenance and repair activities (including tasks, man-hours, materials, and other costs associated with work completion) for each work order received during the performance of the Contract. All work done by the Contractor shall be accomplished under a CMMS work order. Equipment inventory data for each type of equipment shall at a minimum conform to the data acquisition requirements and data shall be provided by the Contractor in a format compatible with the current GSA system as specified by the CO or designee.

GSA's goal is to use Government-furnished CMMS systems in all locations as practicable. Currently there is a project to establish a national CMMS in all regions.

When this occurs the Contractor will be required to transfer all data from the CMMS system database to the Government as specified by the CO or designee. The method and format for the transfer will be determined by the on a task by task basis. Contractor shall provide reports to the CO or their designee as requested and in a format and media as requested. Contractor shall transition (see CMMS Definitions) to the N-CMMS upon notification by GSA that the N-CMMS is ready to proceed. Contractor will have 90 days to complete this transition and begin use of the N-CMMS. Contractor will be responsible for delivering all Contractor furnished CMMS data to GSA in an electronic format compatible with GSA's N-CMMS Universal Donor Database.

*[[[Regions may add to required data format and elements in accordance with regional policy. Regions may want to identify man-hours, costs, materials, etc.]]]*

#### **C.8.6 Quality Control Program**

*[[[This paragraph may be modified or expanded depending on the needs of the building and whether the region uses the CMMS to document quality control (QC) inspections. Regions have the ability to require a Quality Control Plan (QCP) during the proposal process.]]]*

A Quality Control Plan (QCP) shall be developed and submitted for approval to the CO or their designee \_\_\_\_\_ days *[[[Insert timeframe]]]* prior to the start of the Contract. Upon approval, the Contractor shall implement the QCP to ensure Contract compliance, and to ensure that potential problems with building equipment and systems are identified, documented in a CMMS if applicable, and resolved prior to failure. An acceptable QCP shall include, at a minimum, inspections by onsite supervisory personnel and by one or more qualified outside parties. The system of checklists, inspection methodology, and frequencies shall be documented by the Contractor. The Contractor shall maintain a Local file of all quality control inspections conducted by the Contractor, including the corrective actions taken and submit copies of quality control inspections monthly in the Monthly Progress Report. All documentation shall be made available to the Government upon request during the term of the Contract. The QCP shall include, at a minimum, the program of outside inspections, work orders sampling methodology, and a program for verifying compliance with each Contract requirement.

#### **C.8.7 Government Quality Assurance Surveillance Program *[[[The Quality Assurance Surveillance Plan, Exhibit 1, is a sample format that may be used by the spec writer to document their CO or designee's method of determining quality Contractor performance]]]***

The Government may inspect the Contractor using a quality assurance program through random inspections, scheduled inspections, or any other method of inspection that the Government determines reflects the actual successful performance of this Contract. As part of the Government's quality assurance program, the Government may:

- a. Review and, if warranted, reject any reports or other submittals required from the Contractor.
- b. Review performance and service records, including, if applicable, but not limited to monthly progress reports, BAS data, CMMS data, Advance Metering System, (AMS) data and any computerized or hardcopy records maintained by the Contractor documenting performance under this Contract, and require correction of any unsatisfactory conditions noted.
- c. Determine the adequacy of the Contractor's quality control program and documentation and the overall success of this program. The Government may order improvements if it determines the programs are insufficient or ineffective.
- d. Obtain tenant satisfaction survey information and require improvements in service on the basis of such information to the extent such results correlate with deficiencies in Contract requirements.
- e. Conduct random and routine physical inspections of facility equipment and systems, to include programs and files maintained on computers and Contractor onsite offices and work areas, and require correction of deficiencies noted.
- f. Perform inspections with Government personnel or independent third party inspectors.

##### **C.8.7.1 Contract Performance**

Contractor performance will be evaluated on the basis of the performance success or deficiencies, success or failure in meeting other Contract requirements, and the Contractor's record of correcting deficiencies when noted. While corrective actions will be noted, a record of significant performance deficiencies may lead to a performance evaluation that is less than satisfactory even if the Contractor takes corrective action.

##### **C.8.7.2 Methods**

The use or nonuse of any quality assurance methods (e.g., a measurement and verification (M&V) program) by the Government will not constitute a waiver of or excuse from Contract requirements. The Government may implement or change quality assurance measures at any time during the term of the Contract.

#### ***C.8.7.3 Records and Files***

All records and files that this Contract requires the Contractor to maintain shall be made readily accessible to Government representatives, including third party Contract inspectors, on request. All records and files utilized or generated during the course of the Contract by the Contractor, including all standard operating procedures and building operating plans, shall become the property of the Government (this excludes employee personnel files and company financial information).

#### ***C.8.7.4 Cooperation – Inspections***

The Contractor shall instruct all onsite personnel to cooperate with the Government or third party Contract inspector requests for records access and information. This includes answering honestly and comprehensively all questions related to performance of work. The Contractor shall provide personnel to enable inspectors, including third party Contract inspectors, to perform inspections of equipment. The Contractor shall notify the CO or their designee at least 2 weeks in advance when equipment is to be opened and available for inspection by the Government. The Contractor shall open and operate the equipment for observation by all inspectors at no additional cost to the Government provided the Government requests the service at least 48 hours in advance. Most inspections will be performed during normal working hours. However, the Contractor shall provide personnel to enable access for inspectors who need to conduct observation and testing after normal hours to avoid possible disruption to tenants.

#### ***C.8.7.5 Contractor Performance Systems (CPARS)***

GSA uses the CPARS or similar performance measuring system to formally evaluate the Contractors performance. Evaluations are generally conducted annually or more frequently on or about the anniversary date of the Contract and also at the end of the Contract period.

### ***C.9. Building Operating Plan***

*[[[The Building Operating Plan, Exhibit 7, is a sample of the National Template issued in 2008. There are some items that are above and beyond the contents listed in C.9.2. It is understood that updates are required and the spec writer may add or delete items as long as the contents listed in C.9.2 remain intact.]]]*

#### ***C.9.1 Building Operating Plan***

The Contractor shall revise or prepare and submit for approval to the CO or designee, not later than the end of the startup or transition phase or by \_\_\_\_\_ *[[[insert date or time frame]]]*, a building operating plan outlining their operating and general maintenance procedures for all major building equipment and systems (See Section C.9.2., Components of the Building Operating Plan, below). The purpose of the building operating plan is to be a standalone document that is a vehicle for the Contractor to document their plan for operating and maintaining the building and it is also a repository for several documents required throughout the Contract. One of the objectives of this plan is that if key personnel are not available then authorized staff should be able to refer to the BOP and manage and operate the building. The BOP contains critical information such as: who to contact, emergency procedures, energy plan, hours of operation, locations of emergency shut off valves, the location of OEP, COOP, Drawings, and equipment Inventory. The Contractor shall execute the Contract requirements in accordance with the approved building operating plan. The Contractor shall coordinate with the CO or their designee in developing the components of the plan in accordance with the building operating plan template provided by the CO or designee. The building operating plan shall be submitted as an electronic file (MS Word) with regular updates that reflect current personnel, subcontractors, equipment, systems, and operating procedures. The Contractor shall annually review and update the building operating plan and submit



an electronic file (MS Word or searchable PDF) of the complete updated building operating plan on the anniversary of the Contract start date of each Contract year. If the Contractor fails to submit a satisfactory building operating plan at the end of the startup phase, the Government may suspend payments until a satisfactory plan is submitted.

*[[[Delete the following paragraph for a newly constructed or completely renovated building, or if the existing building operating plan is of poor quality.]]]*

The building operating plan may be based on, or derived from, the existing building operating plan and other existing documents. However, all components shall be reviewed and updated. Deficiencies in the existing plan do not excuse deficiencies in the new plan.

### **C.9.2 Components of the Building Operating Plan (BOP)**

*[[[Regions may add items. It is important that the CO or their designee provide the necessary information to the Contractor to complete the BOP such as OEP, COOP, drawings, etc.]]]*

The components of the building operating plan are not additional requirements but a compilation of requirements stated throughout the SOW. Some of the information/documents will be provided by the CO or designee to complete this plan, such as OEP, COOP, drawings, etc. The building operating plan shall contain:

- a. Contact information (Local and corporate).
- b. Description of staffing, responsibilities, and work schedules.
- c. Standard operating procedures for operating building systems, to include at a minimum:
  - 1) Startup and shutdown times and procedures relative to various environmental conditions.
  - 2) Procedures to accommodate tenant overtime utility requests. Provide listings of mechanical equipment, hours of operation and separate procedures for heating and cooling.
  - 3) Energy Conservation, Management and Control Systems, Peak load demand management procedures, AMS data for conservation strategies (if applicable).
  - 4) Other operating strategies to maximize efficiency and minimize energy consumption.
  - 5) Descriptions of major mechanical equipment and sequences of operations for equipment systems such as schedules, settings, start-ups, shut-down, control sequences, etc.
  - 6) Locations of all major utility shutoffs, including gas, electric, and water.
  - 7) Locations of all electric rooms and a narrative of the areas served by each to include emergency generators, substations and transformers, equipment that is on the emergency generator
- d. Architectural and Structural systems maintenance (facade, roof, gutters, drains, windows etc)
- e. Tour and watch locations, sign-in and documentation procedures.
- f. Maintenance schedules, procedures, and a reference to which preventive or predictive maintenance standards or guides the Contractor will use. For fire protection and life safety systems include specific references to which inspection, testing, or maintenance shall be performed each week, month, quarter, semi-annually, annually, 5 years, etc., in a format for the applicable NFPA code or standard.
- g. List of test equipment to be maintained onsite to support troubleshooting, sensor calibrations, etc.
- h. Vertical Transportation, if applicable, escalators, elevators, dumb waiters or note Contractor information.
- i. A description of how building equipment data is maintained and updated. Service request and repair procedures, to include staffing and procedures for the service requests, during operating hours, after hours, and emergency function, if applicable.
- j. Safety, Security, Disaster Emergency Response, Recovery and Reporting Procedures Reference the location or incorporate contingency plans for:
  - 1) Loss of the Contractor's onsite personnel (i.e., strike, walkout, injury, abrupt resignation).
  - 2) Civil disturbance or major security threat.
  - 3) Natural disasters, bombing, or other event that damages the building's structure or utilities.
  - 4) Floods, including flooding caused by plumbing breaks.
  - 5) Hazardous materials including asbestos, lead paint, leaks or spills, water management

- 6) Utilities curtailment plans and shut off locations.
- 7) Inoperability and impairment of fire protection and life safety systems (including fire watch and impairment procedures (e.g., red tags, etc.).
- 8) Location of fire alarm control unit/fire control room/instructions to operate PA system in emergency if applicable.
- 9) Location of incoming municipal fire protection water supply
- 10) Location of fire sprinkler riser rooms
- 11) Location of fire pump.
- 12) Location of sump and sewage ejector pumps and emergency procedures.
- 13) Pressure booster and reducing stations, back flow preventers.
- 14) Underground Storage Tanks.
- 15) Confined Space Locations.
- 16) Portable Fire Extinguisher Locations
- 17) Defibrillator Locations
- 18) Radon mitigation program if applicable.
- k. Other contingency plans as necessary to support the Government's Continuity of Operations (COOP), Occupant Emergency (OEP), and Shelter in Place planning for the site. Description of environmental regulatory requirements such as Air Quality Management District and include rules that apply to equipment in the building, which permits are necessary, inspection and certification requirements and other essential information. Identify how the administrative and technical requirements will be managed for the timely accomplishment of all Contract requirements.
- l. Assignments of Responsibilities: Identify personnel with Quality Control Plan functions and the personnel with authority to commit funds, and the dollar level of that authority for this Contract.
- m. Description of demand response or utility curtailment programs in which the building participates, to include communications protocols and curtailment activities.
- n. Location of equipment inventory list.

***C.10. Equipment Inventory [[[Note to spec writer: If there is not an accurate inventory available to include with RFP provide additional time for the Contractor to correct.]]]***

***The Contractor shall:***

- a. Maintain and update the building equipment inventory and equipment labeling.
- b. Maintain equipment inventory and maintenance records in a CMMS.
- c. Maintain the same asset identification system currently used for new and replacement equipment unless a national asset identification standard is provided. Some asset identification systems include bar-coding, Radio Frequency identification (RFID), or other equipment tagging.
- d. Collect and maintain an inventory of: (1) all equipment of types that require maintenance or certifications pursuant to the PBS Maintenance Standards or applicable code requirements, (2) equipment which is operated through a sequence of operations, (3) electronic controllers and network devices, (4) sensors, (5) Agency owned sensors , if applicable.
- e. Collect and maintain the following equipment data: Equipment ID, Equipment Type, Equipment Description, Asset Identification Code, Manufacturer, Model Number, Serial Number, Equipment Status, Building Number, and Location (Exhibit J. 15). ***[[[Regions may indicate which CMMS fields are required if the CMMS includes fields that are not useful]]]***
  - 1) The Contractor shall provide all data to GSA in a format approved by the CO or designee with certification that the inventory is complete and accurate. For facilities where the GSA provides a CMMS, the government-provided CMMS is the required format for providing inventory data.
  - 2) The Contractor shall annually certify that the Maintained Building Equipment Inventory is up-to-date and submit the certified inventory to the CO or designee.
  - 3) The Contractor shall update equipment data when equipment is added, removed, or retrofitted as part of a project, or discovered by GSA or the Contractor.

- 4) The Contractor shall review and update equipment records including asset information, maintenance records and preventive maintenance records any time maintenance is performed on a piece of equipment.
- 5) The Contractor shall report to the CO or their designee changes to the asset inventory and preventative maintenance schedule within five working days of collecting and gathering equipment information.

Omissions on existing inventory do not relieve the Contractor from the responsibility for the maintenance of the equipment. If the inventory data does not meet Contract requirements, action to withhold payments will take place. The Contractor may request equitable adjustment pertaining to physical changes in building equipment and submit to the CO or designee for consideration.

### **C.11. Monthly Progress Reports**

*[[[Regions may delete the requirements of the Contractor to provide monthly progress reports using CMMS data if the CMMS program is government-furnished. If the CMMS Program as provided by the government is in use (preferred), some components of this report may be unnecessary because the Government will be able to generate reporting from the CMMS. Spec writer may add additional reporting requirements if applicable]]]*

The Contractor shall develop a monthly progress report using CMMS data, describing the status of maintenance and operations as of the last day of the performance month. The report shall be submitted to the by the 5<sup>th</sup> working day of the subsequent month. This report shall include:

- a. Work Order status of all types of maintenance, repairs, service calls (highlight overdue and tenant complaints), to include deferred, completed, and active (include estimated completion date), by type of work i.e., reimbursable, repair, and work orders resulting from testing and inspections, and any equipment out of service.
- b. Explanation of any equipment, designed to be controlled by the BAS, operating in manual mode as of the end of the performance month, and of any other overrides to sequences of operations in effect as of the end of the performance month.
- c. Operating schedule changes (manual or programmed)
- d. Description of any lost time accidents or other safety problems, including incidents involving hazardous materials that occurred during the performance month
- e. Copies of quality control inspections performed during the month attached to the report.
- f. Building Management Support Services (utility hours/miscellaneous work) provided during the month.
- g. Copy of arrival and departure reports
- h. Monthly water treatment test results
- i. Recalibration documentation of advanced metering equipment.
- j. When testing is performed, the Contractor shall submit results with the next monthly progress report
- k. Refrigerant control logs shall be updated as required, and a copy sent with the monthly report.
- l. The Contract shall record the fuel levels monthly and report findings in the Monthly Progress Report
- m. Review of energy performance trends as of the end of the performance month and description of likely causes of significant changes from the same month 1 year prior.
- n. Check and record diesel fuel levels

### **C.12. Performance Review Meetings**

The Contractor shall meet with the CO or their designee and other Government representatives, at the discretion of the CO or designee, to review Contract performance.

### **C.13. Equipment Condition Assessment**

During the performance of the requirements of this Contract the Contractor shall note the condition and efficiency of building equipment and systems on an ongoing basis in the CMMS. Any equipment or systems that the Contractor determines are reaching the end of their life cycle shall be brought to the attention of the CO or their designee. When requested, the Contractor shall complete and submit to the CO or their designee an itemized equipment condition assessment with their recommendation for equipment or system upgrades or replacements (that has reached end of their life cycle), including a text description of each recommended upgrade or replacement and their life cycle cost analysis that shall include estimated project cost. The equipment condition assessment reports shall be produced in Word, Excel, or PDF format and submitted electronically as an email attachment to the CO or their designee.

### **C.14. Occupant Feedback Program**

*[[[Insert regional feedback program if applicable or mark “Reserved” if not applicable.]]]*

### **C.15. Reference Library**

*[[[Regions may use language below or adjust this Section as applicable to their facility.]]]*

The Contractor shall maintain a comprehensive reference library that includes building design or record documents, renovation or equipment retrofit design or record documents, maintenance reference documents, applicable NFPA codes and standards, fire protection system as-built drawings, fire protection system operations and maintenance manuals with copies of approved submittals, fire protection system parts list, fire protection system zoning scheme, fire protection system sequence of operation matrix, HVAC Operations Manual (if one has been developed), building operating plan, energy and other building technical studies, hazardous materials surveys, and other documents necessary to document the design, function, and condition of the building. The Contractor shall safeguard this information in accordance with the provisions of Section H.6., Sensitive but Unclassified Building Information (SBU).

### **C.16. Review of Design Documents** *[[[Region specify amount of hours per month anticipated for these service any time above the allotted time is reimbursable.]]]*

Utilizing the most qualified onsite personnel familiar with the operations of the facilities covered under the scope of this Contract, the Contractor shall review design and construction project documents as requested by the CO or designee. The purpose of this review is to allow the Contractor to comment on any negative impact the proposed project may have on their ability to efficiently operate the building equipment or systems. When requested to perform these services, the Contractor will be compensated for the actual time required spent. The Contractor should also be allowed to provide input or propose ideas that may improve the operations and provide value engineering.

### **C.17. Building Management Support Services (miscellaneous and utility escort hours)**

The Contractor shall provide reasonable and competent assistance during normal working hours to GSA personnel or other GSA Contractors performing energy studies, engineering studies, building condition evaluations, fire protection facility surveys, project designs within the building, and other access needs. Such assistance shall include escorting investigatory personnel through spaces in the building in accordance with building security requirements, explaining the operation and condition of equipment and systems to investigatory personnel, and providing access to trend data, maintenance records, reference library materials, and other pertinent building technical data to investigatory personnel. The CO or their designee shall inform the Contractor as far in advance as possible of the actual date and time these services are needed. When requested to perform these services the Contractor will be compensated for the actual time required to escort the GSA personnel or Contractor at the hourly rate specified in Section B of this Contract. Report number of hours provided in the Monthly Progress Report C.11 *[[[Account for this cost via a separate line item in Section B.]]]*

### ***C.18. Inspection Assistance for Space Build Outs***

When tenant improvement or space alteration work is completed in the building, the CO or their designee may request that the Contractor inspect the space to verify that all offices have appropriately zoned air supply and return ductwork and diffusers, appropriately zoned lighting circuits, and all zone HVAC/lighting controls have been adjusted appropriately and labeling of breakers in electrical panels and outlet cover circuit designations are complete.

Obvious problems or conditions that may potentially affect the efficient operation of the building or create a negative impact on the tenant shall be immediately reported to the CO or their designee.

### ***C.19. Emergency Shutdown Instructions and Tour Checklists***

Emergency shutdown instructions (including contact name and telephone numbers) and tour inspection checklists and Lock-Out-Tag-Out procedures shall be posted by the Contractor in all mechanical rooms and or electrical rooms, as applicable to the equipment in the given room. Such instructions and checklists shall be posted in an accessible and conspicuous location. All instructions and checklist will be recorded in the CMMS.

### ***C.20. Labeling of Electrical Circuits***

*[[[Regions may choose to modify or “Reserve” this requirement if labeling has not been maintained in a building and it would be prohibitively expensive to do the necessary circuit tracing to establish labeling.]]]*

The labeling of the electrical circuits shall be maintained up to date. When another Contractor (not the O&M Contractor) adds or modifies electric circuits the O&M Contractor shall inform the CO or their designee the compliance of annotating the changes to the panel and the update to the single line diagrams using the original electronic file format.

## ***C.21. Operational Requirements***

### ***C.21.1 General***

The Contractor shall provide building operations services for all systems covered by this Contract, so as to maintain uninterrupted utilities services, and environmental conditioning to tenants during normal working hours, and at other times as described in this document, so as to preserve the asset value of the facility and its systems and to otherwise minimize operating costs to the Government without compromising other Contract objectives or requirements. The Contractor shall be briefed by the property manager on GSA’s policy regarding overtime utilities to better understand what is considered standard and above standard services. Some or all of these requirements are to be documented or referenced in the Building Operating Plan, see Paragraph C.9.2.

### ***C.21.2 Extended Operating Hours***

*[[[Regions shall delete this paragraph provision if not applicable to their facility and mark as “Reserved.”]]]*

The following areas of the building regularly operate during hours outside of normal working hours; supporting equipment shall be operated and maintained by the Contractor so as to support these extended operating hours.

*[[[List the areas and hours of operation.]]]*

Areas of the building with extended operating hours may change during the performance period of the Contract. The Contractor will be notified of these changes as soon as possible.



### ***C.21.3 Continuity of Operations (COOP)***

*[[[Regions may add to this language to address location specific contingency plans and where the Contractor is involved in the execution of COOP requirements.]]]*

The Contractor shall operate the facility and participate in emergency operations in support Occupant Emergency Plan (OEP) as specified in Section H.21.

### ***C.21.4 Emergency Operations Plan***

The Contractor shall be responsible for developing an emergency operations plan within the building operating plan and shall become thoroughly familiar with the Government's occupant emergency plan and other regional plans as applicable. The Contractor's plan shall include the following information: position and contact phone number of each Contractor person, what each position is responsible for in each emergency, general administrative support the Contractor will provide during emergencies and any subcontractor support and contact information.

### ***C.21.5 Tenant Environment***

Lighting levels shall be adjusted under the guidance of the CO or their designee where they can be adjusted without changing fixtures (e.g., tuning dimmable ballasts, de-lamping). The Contractor should note that while the PBS P100 establishes target lighting levels, light quality, specific tenant requirements, energy conservation, and other individual factors also have an impact on requirements. In compliance with the FMR sections; 1002-74.185 and 102-74.195, respectively the contractor shall meet ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy and ASHRAE 62.1-2007, Ventilation for Acceptable Indoor Air. The Contractor shall maintain these standards throughout the normal working hours. Equipment start up shall occur efficiently in order to fully attain environmental conditions at the beginning of normal working hours. The contractor shall comply with the ASHREA Standard 55 – 2004 to achieve temperature settings between 74°F and 78°F in the summer months and between 68°F and 72°F in the winter months. These recommended temperature settings apply to the entire building not individual offices. The Contractor shall report significant changes in the operating conditions to the CO or their designee. If the standards (ASHRAE Standards 55 and 62) cannot be achieve the Contractor shall submit a written deviation to the CO or their designee for approval.

### ***C.21.6 Energy and Water Efficiency***

The Contractor shall operate equipment and systems as efficiently as possible without compromising service to the tenants. Failure to operate equipment prudently (e.g., unnecessarily setting demand peaks, simultaneously heating and cooling, operating equipment when not needed, overriding set point unnecessarily, or failing to correct underlying conditions) may result in deductions. The CO or their designee will provide the Contractor with Operational Performance Targets (See Exhibit 10) for energy and water, where data is available within the first quarter of the award of the Contract. The Contractor shall populate *[[[the Building Energy and Water Efficiency Use Plan Exhibit 11 or Annual Building Energy and Water Efficiency Report Exhibit 13]]]* provided by CO or their designee to achieve the yearly energy and water targets. The plan shall identify measures to conserve energy, any operational or physical changes to the system, plant, or equipment, and optimization opportunities to reduce consumption or cost. The Contractor shall report monthly and annually (Exhibit 12&13) energy and water usage as compared to the previous year and document energy and water saving initiatives and reasons why performance goals were or were not met. The report shall be submitted to the CO or their designee by the 5<sup>th</sup> working day of the subsequent month. The Contractor is to make full use of available analytic tools (e.g., BAS, AMS, GSA Link data) to diagnose problems and identify operational improvements. The Contractor, in coordination with the CO or designee, shall pursue the use of energy-efficient replacement parts and equipment items (not limited to Energy Star ® or FEMP-designated Energy Efficient products, Water Sense, Design for the Environment products) that will meet or exceed the requirements of this statement of work. In cases where equipment is being replaced or upgraded to high

efficiency models the Contractor shall investigate all potential energy rebates that would be advantageous to the government. Any rebates received from a service utility provider shall be assigned to the Government.

#### **C.22. System Performance Standards or Procedures**

*[[[Where existing HVAC Operations Manuals or other engineering standards or procedures have been developed to establish technical standards for the particular building's HVAC systems, insert language here If none exist, mark "Reserved"]]]*

#### **C.23. Service Requests** *[[[procedures will be documented in the Building Operating Plan, see paragraph C.9.2]]*

##### **C.23.1 General**

The Contractor shall respond to service requests and initiate corrective actions and identify any repair requirements during normal working hours. The Contractor shall respond to emergency service requests (during normal working hours) and callback (after hours) work requests at all times. The Government (or, where applicable, the tenant Agency) may transmit work orders to the Contractor for service request or emergency service request and callback orally, by email, by creation of a work order by a Government employee or representative, or by generating an automated work order. The Contractor shall respond according to specified service response times.

##### **C.23.2 Emergency Service Request** *[[[NCMMS recommended time frame is 30 minutes]]]*

Emergency service requests are service requests where the work consists of correcting failures that constitute an immediate danger to personnel or property, including but not limited to: broken water pipes, stalled elevators with trapped passengers electrical power outages, electrical problems that may cause fire or shock, gas or oil leaks, major air conditioning or heating problems, etc., or any work considered by the CO or their designee to be of an emergency nature. The Contractor shall respond to emergency service request immediately (within the shortest possible time consistent with the mechanic's location) during normal working hours and within \_\_\_\_ hours. *[[[Insert timeframe]]]* The Contractor shall remain on the job until the emergency situation has been secured and adequate temporary repairs have been made. Permanent repair shall be governed by the repairs provisions in this document.

##### **C.23.3 Emergency Call Back (after hours)** *[[[NCMMS recommended time frame is 60 minutes]]]*

Emergency call back requests are service requests where the work consists of correcting failures that constitute an immediate danger to personnel or property, including, but not limited to: broken water pipes, stalled elevators with trapped passengers *[[[ delete if not applicable]]]*, electrical power outages, electrical problems that may cause fire or shock, gas or oil leaks, major air conditioning, heating problems or fire alarm malfunctions, etc., or any work considered by the CO or their designee to be of an emergency nature. The Contractor shall respond to emergency call back service request immediately (within the shortest possible time consistent with the mechanic's location) after working hours within \_\_\_\_ hours. *[[[Insert timeframe]]]* The Contractor shall remain on the job until the emergency situation has been secured and adequate temporary repairs have been made. Permanent repair shall be governed by the repairs provisions in this document. The Contractor shall provide a written accounting of any emergency call back, to include costs incurred and plan for permanent correction of the problem, to the CO or their designee the morning of the next working day.

##### **C.23.4 Urgent Service Request Response** *[[[NCMMS recommended time frame is 60 minutes]]]*

Urgent service requests are those service requests where the work consists of correcting failures that interrupt or otherwise adversely impact either GSA operations or building occupant operations, but do not pose

immediate danger. Examples of these types of service requests include, but are not limited to, inoperative electrical circuits, temperature complaints, inoperative lighting above a work station, flush valve stuck open, any malfunctions to equipment that affect the operations of building occupants, or any work considered by the CO or their designee to be of an urgent nature. The Contractor shall respond to urgent work requests within \_\_\_\_\_ hours *[[[Insert timeframe]]]* during normal working hours. The Contractor shall remain on the job until the urgent repairs have been made. Permanent repair shall be governed by the repairs provisions within this document.

#### ***C.23.5 Routine Service Request Response***

The Contractor shall respond promptly to routine work requests (i.e. plumbing & lighting issues) and complete the required work within \_\_\_\_\_ hours *[[[Insert timeframe]]]* of notification. The Contractor shall immediately notify the CO or their designee with a written extension when the routine service call cannot be completed within the specified timeframe.

### ***C.24. Tours*** *[[[procedures will be documented in the building operating plan, see paragraph C.9.2]]]*

#### ***C.24.1 General***

The Contractor shall tour major building equipment at set frequencies. Log sheets associated with major operating equipment shall be completed at the time of tours and the information recorded in the CMMS. At the commencement of Contract performance, CO or their designee will direct the Contractor to include on the log sheets established design condition numbers for reference against actual readings at the time tours are performed. Paper log sheets need not be used for equipment monitored and data logged by the BAS, if such monitoring and data logging provides a sufficient database of operating data to allow for analysis of trends in equipment performance and troubleshooting. The Contractor shall document all tours completed in the CMMS. All findings noted during the tour shall be entered as remarks on the tour sheet and a work order shall be initiated for corrective action by the Contractor.

#### ***C.24.2 Operating Logs and Tour Check Sheets***

Operating logs and tour sheets shall be maintained by the Contractor for major equipment. Information recorded on the logs shall be adequate to track the operating hours and performance history of the equipment and the information recorded in the CMMS. Tour check sheets shall be stationed at major points for building tours (for example, air handler rooms). These shall be checked, initialed and dated by the Contractor when tours are performed. There shall be a different checklist columns on a standard tour check sheet for each frequency. Tour sheets shall contain columns for major operating parameters and shall indicate the tolerance bands for acceptable performance, where available.

#### ***C.24.3 Tour Frequencies***

*[[[Regions may add or delete according to building-specifics.]]]*

Minimum:

- a. DAILY: Major HVAC equipment (when in operation), including boilers, chillers, cooling towers, pneumatic control air compressors, and air handler rooms. Fire alarm system control units (e.g. fire alarm system control units shall not have any unwanted trouble conditions). Steam system reducing and regulating stations. Special HVAC for critical functions.
- b. WEEKLY: Distributed HVAC equipment including package units and external condensers, pumps, motors, sewage ejectors, fire pumps, and generators.
- c. TWICE PER MONTH: Battery systems and uninterruptible power systems (UPS).
- d. MONTHLY: Transformers, secondary electrical rooms, switchgear and primary electrical equipment rooms, condensate drip pans and roofs.



#### **C.24.4 Condensate Drip Pans**

*[[[Remove this Section if not applicable and mark as “Reserved.”]]]*

The Contractor shall conduct inspections of the condensate drip pans of all air handling units, A/C package units, window A/C units, and other equipment items and or systems that physically have drip pans to ensure that they drain properly. Such inspections shall be conducted in accordance with the tour program and be performed no less frequently than monthly. Pans that are not level or that leak shall be reported to the CO or designee. All drip pans shall be treated with an appropriate biocide to control the growth of algae, etc. If any condensate pans are inaccessible, the Contractor shall notify the CO or their designee immediately.

#### **C.24.5 Monitoring of Central Plant Equipment**

*[[[The specifications drafter may modify this to reflect conditions or concerns at the building – condition of plant equipment, history of stability, instability, etc.]]]*

Where central plant equipment (chillers over \_\_\_\_\_ tons *[[[Insert tonnage]]]* capacity, boilers over \_\_\_\_\_ pounds per square inch (PSI) *[[[Insert PSI rating]]]* is not (1) controlled through a sequence of operations programmed in a BAS, and (2) centrally alarmed with alarm paging, operational watch procedures, in addition to tour requirements specified elsewhere in this document, shall be performed as follows:

- a. Monitoring the starting, stopping, and loading of equipment.
- b. Checking all operating equipment in the watch area every 2 hours.
- c. Recording operating data in appropriate logs or records every 2 hours.
- d. Making adjustments at the central control panel in response to changing operating conditions.

**For fire protection and life safety systems, tour frequencies shall be in accordance with the requirements in the applicable NFPA code and standards.**

#### **C.25. Demand Response Programs**

The Government may participate in any of the available demand response programs or critical peak pricing tariffs administered by utilities, State agencies, or third-party administrators. If the Government participates in such a program and advises the Contractor of the requirements of the program, the Contractor shall cooperate fully in the implementation of the program.

#### **C.26. Curtailment Program**

The Contractor shall develop a curtailment program in consultation with the CO or their designee and subject to approval; the program shall be described in the BOP (C.9.2). The Contractor shall implement all approved curtailment measures (which might typically include turning off unnecessary lighting, implementing temperature setback programs, etc.) immediately on notification of a curtailment, in accordance with the plan. Failure to diligently manage systems in accordance with such programs may result in performance deductions for excess costs .

#### **C.27. BAS Alarm Response**

*[[[This language may be adjusted to accommodate special considerations. It shall be deleted where there is no BAS and marked “Reserved.”]]]*

The Contractor shall maintain all BAS systems using qualified employees. BAS alarms shall be treated as service requests and responded to accordingly. Any major adjustments to set points to accommodate tenant comfort shall be approved in advance by the CO or designee. Repetitive or associated alarms may be treated in

the aggregate and tracked under the work order system established in the CMMS. Communications for alarms set up for remote notification shall be tested on a recurring basis.

### **C.28 Advanced Metering Program**

*[[[Remove and mark “Reserved” if there is no advanced metering system or if this Section is covered under another SOW]]] [[Insert buildings with advanced meters]]]*

GSA’s purpose for installing these meters is to monitor, identify, and implement opportunities to reduce energy usage at the building(s) and, in some cases, to verify that the utility companies are billing correctly. In many cases, the AMS will be connected to the BAS. It shall be the Contractor’s responsibility to partner with GSA to fully utilize the AMS to develop and implement strategies that will result in overall energy reductions per Section C.21.6. The Contractor shall have all access to the AMS and be trained in its use as stipulated in **H.15.3.16, Qualifications of AMS, and BAS Technicians**. The Contractor shall be trained in its use of advanced meters and shall demonstrate minimum competency in developing energy/water usage graphs and where electric advanced meters are capable of measuring power quality, the contractor shall be sufficiently familiar with the software module to utilize this information when troubleshooting electric power issues such as transients, voltage disturbances, power factors, and harmonics.

*[[[Insert the following if Regional Service Agreement is not in place for AMS]]].*

#### **C.28.1 Verification and Calibration**

The Contractor shall verify daily that each of the advanced meters is functioning properly and are communicating to the regional and/or central office server. Where advanced meters are connected through the BAS, the Contractor shall verify- daily, proper information and data sharing. Any communication failures shall be corrected prior to any loss of data. In the event of a communications failure, the Contractor should refer to both the manufacturers and GSA’s troubleshooting guides. The Contractor shall be responsible for the recalibration of the advanced meters in accordance with the manufacturer’s recommended frequency or sooner if there is evidence that the meters are not reading correctly. Calibration shall be scheduled in advance along with other building preventive maintenance tasks. Documentation of the recalibration shall be submitted with preventive maintenance reports. Where weather sensing equipment is installed as part of the AMS, Contractor shall ensure proper daily communication and shall recalibrate in accordance with the manufacturer’s recommended frequency.

### **C.29. Protection and Damage**

The Contractor shall make reasonable efforts to assist the Government to prevent hazardous conditions and property damage and to maintain security. The Contractor shall promptly report such conditions or activities to the CO or their designee or Federal Protective Service (FPS) personnel. The Contractor shall protect Government property, buildings, materials, equipment, supplies, records, and data within the Contractor’s control against unauthorized access, loss, or damage and excessive energy consumption. The Contractor shall establish a system for onsite work force personnel to report potentially hazardous conditions in the building to the CO or designee. The Contractor and Contractor’s employees and subcontractors shall comply with the GSA’s Rules and Regulations Governing Public Buildings and Grounds (as posted in the building) and shall promptly report violations by employees, or as otherwise observed, to the CO or their designee or security personnel. The Contractor shall provide reasonable assistance to security or emergency response personnel as needed.

### **C.30. Negligence**

The Contractor shall provide all labor, materials and equipment necessary for the protection of Government personnel, equipment, furnishings, buildings, and facility accessories (such as parking lots, fences, etc.) from damage caused by Contractor’s negligence. Any items damaged due to work performed by the Contractor or

subcontractor working for the Contractor shall be repaired or replaced to its original condition and finish at no additional cost to the Government. If equipment shall be operated beyond normal conditions to prevent damage to equipment, the Contractor will be responsible to pay for additional energy used as a result of negligence.

### ***C.31. Key Control***

The Contractor shall follow the building's key control program. Keys issued to the Contractor or the Contractor's personnel or subcontractors shall be signed for and not transferred to other personnel unless recorded in the key control log. The Contractor is financially liable for the cost of rekeying if keys are lost or not recovered from terminated employees or subcontractors.

### ***C.32. Disruptive or Hazardous Tools***

The CO or their designee shall approve use of impact tools and power-actuated tools during normal working hours. Burning or welding equipment may be used only with written permission from the property management office or CO or designee. A Welding and Burning Permit (GSA Form 1755 or equivalent) shall be issued in advance for each day welding or burning is performed.

### ***C.33. Scheduled Disruption to Utilities, Lighting, Fire Protection & Life Safety Systems, or Space Conditioning***

Any work that will disrupt utilities, fire protection and life safety systems, lighting or space conditioning for building tenants shall be scheduled and approved in advance with the CO or their designee and is generally required to be performed outside of normal working hours.

### ***C.34. Plumbing and Restrooms***

Plumbing systems shall be maintained, repaired, and kept functional to the point of service delivery as defined by the utility company. The Contractor shall ensure all system drains, including storm drainage and roof drains, remain clear and unobstructed. The Contractor shall take any necessary steps to prevent odors emitting from drains or other plumbing systems into occupied space, to include keeping water in traps appropriately maintained. The Contractor shall clear toilet and sink blockages, as necessary. Such requests will be transmitted to the Contractor by the CO or their designee through service request procedures. When replacing plumbing fixtures, use the most reduced water usage device as approved by the CO or designee. (For additional information see: <http://www.epa.gov/watersense/>)

### ***C.35. Maintenance Program***

#### ***C.35.1 General [[[The CO should consult with the SME on Contractor's scheduled PM system to ensure this meets GSA's minimal PM requirements]]]***

The Contractor shall establish an effective system for scheduling and performing scheduled preventive maintenance on all building equipment and systems requiring a preventive maintenance procedure covered under the scope of this Contract. The Contractor shall submit this system to the CO or designee, including the list of items receiving a preventive maintenance procedure as well as the specific maintenance standard or guide describing the preventive maintenance procedure and frequency (see Section C.35.2, Maintenance Standard, below), for approval within \_\_\_\_ days *Insert number of days* prior to Contract start date.

#### ***C.35.2 Maintenance Standard***

As part of the Contractor's established system for scheduling and performing scheduled preventive maintenance (See C.35.1, General, above), the Contractor shall propose to the CO or designee, preventive or

predictive maintenance standards or guides for each piece of equipment where the manufacturer/designer recommends preventive maintenance. Minimally, the preventive or predictive maintenance standards or guides proposed by the Contractor shall be based on; manufacturer's recommended maintenance or the most current Public Buildings Service Operations and Maintenance Standards 2012 (PM Guide) or guides proposed by Contractor. If

the Contractor uses the most current version of the PM Guides then the Contractor assumes responsibility that the PM guides all inclusive of all the required preventive maintenance requirements for equipment and systems in the building. The preventive or predictive maintenance standards proposed by the Contractor may be based on a combination of equipment manufacturer's recommendations, the PBS O&M Standards, (PM Guide), sensor technology, diagnostic software, Contractor's experience and other sources. The equipment requiring Contractor proposed preventive or predictive maintenance standards or guides shall include all of the building equipment when any of the following equipment characteristics apply:

- a. The equipment normally requires periodic replacement of consumable components.
- b. The equipment normally requires periodic or occasional cleaning.
- c. The equipment has moving parts.
- d. The equipment is prone to failure before overall obsolescence of the system it serves.
- e. The equipment is of a type itemized in the NETA, Maintenance Testing Specifications.
- f. The equipment requires inspection, testing, and maintenance in accordance with NFPA codes and standards.
- g. The equipment requires maintenance in accordance with any other provision of this Contract.

The contractor shall schedule preventive maintenance on new equipment in the CMMS system when the extended maintenance service is completed by the installer and ensure that all pertinent warranty information and proposed maintenance plans are sufficient to uphold our obligations under the warranties.

*[[[ The Contractor shall not use any Contractor-proposed preventive or predictive maintenance standards or guides or any of the Public Buildings Service Operations and Maintenance Standards guides to perform inspections, testing, and preventive maintenance on fire protection and life safety systems and equipment. The Contractor shall be required to use the NFPA Codes and Standards specified in this document to perform inspections, testing, and preventive maintenance of fire protection and life safety systems and equipment. In addition, the Contractor shall be required to follow the specific testing and inspection frequencies and methods specified in such NFPA Codes and Standards. The Contractor shall record such inspection and testing services on the appropriate NFPA inspection and testing forms]]].*

#### **C.35.3 Application of Diagnostic Software**

*[[[Delete this provision and mark "Reserved" for buildings where Performance and Continuous Re-Commissioning Analysis Tool (PACRAT), Chiller Check, GSALink or other diagnostic software is unlikely to be used. Add any diagnostic or continuous commissioning software and or equipment currently being used.]]]*

GSA is fielding diagnostic and optimization software to detect problems and inefficiencies in equipment operation. The Contractor shall act on the recommendations of such diagnostic and optimization software reporting. This may include using the results of the diagnostic and optimization software to manually generate a service request, or to respond to a service request automatically generated by the diagnostic program application. The failure of the Government to implement such diagnostic programs does not relieve the Contractor of responsibility for detecting, diagnosing, and correcting deficiencies and inefficiencies.

#### **C.35.4 BAS Control Systems**

*[[[Regions shall adjust this language as necessary for buildings that have no controls or have pneumatic systems.]]]*

Control systems shall be maintained as designed. The Contractor is responsible for all system hardware; for keeping software functioning and for reloading software in computers or controllers (application specific controllers -ASC) as necessary; for making set point adjustments as necessary and appropriate; for other than reloading programs and for making operator level changes such as set point adjustments. The Contractor is also responsible for periodic backups when the OCIO's office does not provide this function. The Contractor is not responsible for upgrading software but should inform GSA of software update revisions and patches. The Government may upgrade or change control system software or reprogram control systems during the performance period of the Contract. If the Government provides operator level training and operator level documentation for the Contractor's use, the Contractor shall not claim additional payment for changing to the new or upgraded software or control programs. The Contractor shall not modify sequences of operation or control programs or run systems manually without prior approval of the CO or their designee and regional subject matter expert (SME).

***C.35.4.1 BAS Operating Standards*** All computers networked with building monitoring and control systems located inside GSA facilities, or which provide storage of and/or access to GSA data, which includes data related to energy usage, industrial systems controls, physical access controls, lighting controls are required to be hosted exclusively on GSA's physical network and system infrastructure, unless otherwise excepted. The contractor shall maintain the following minimum standards: *[[[Connecting to the GSA Network – Federal IT regulations regarding Trusted Internet Connection (TIC) in conjunction with PBS and GSA and GSA CIO's IT Policies require all PBS systems needing network connectivity to reside on the GSA network. ]]]*

***C.35.4.1.1 GSA-hosted Systems Requirements***

- a.) All building monitoring and control systems, applications and devices will be implemented as designated in the P100 (2011 or newer) and the PBS Building Technology Policy. Additionally, all government IT systems are required to meet FISMA standards for IT security.
- b.) All building systems software, server and workstations based, will be hosted on Government furnished equipment (GFE)
- c.) All IP traffic is managed by GSA, and IP addresses as well as all routing and switching equipment will only be furnished exclusively by GSA.
- d.) All vendors provided software that has an End User License Agreement must be presented to and approved by GSA Office of the General Counsel before that software is purchased.
- e.) Operations and Maintenance contractors will be responsible for supporting all cabled path ways to include copper and fiber cabling, necessary to enable IP network communication among system devices and network components, to include all break/fix requirements. All new cabling, to include break fix, should be done in accordance with PBS Telecommunications Distribution and Design Guide.
- f.) Operations and Maintenance contractor is responsible for software, licenses and security updates to all vendor provided systems devices.

g.) Operations and Maintenance contract staff must receive preliminary favorable and ultimately completely favorable adjudication of their National Agency Check with Inquiries clearance in accordance with the HSPD-12 directive to obtain a GSA ENT user credential, which is required for all system access.

h.) At no time should a GSA hosted building monitoring and control systems be made accessible to the public internet or via any 3<sup>rd</sup> party network connection.

#### ***C.35.4.1.2 Excepted Systems Requirements (not hosted on GSA's system infrastructure)***

a.) An approved antivirus software subscription shall be kept in effect and the software used at all times.

b.) All internet connectivity to the building control systems must be approved by GSA's Office of the Chief Information Officer.

c.) All vendors provided software that has an End User License Agreement must be presented to and approved by GSA Office of the General Counsel before that software is purchased.

d.) Contractor personnel shall be prevented from using the system to connect to Web sites not reasonably related to building operations.

e.) Antivirus and spyware scans shall be conducted monthly. *[[[Check to see if this is a government function]]]*

f.) The Operations and Maintenance contractor is responsible for keeping all workstation and server operating systems updated, to include Windows (or other operating system), JAVA, Adobe and all other standard software. Critical updates shall be downloaded and installed monthly.

g.) Complete data backup to a CD, DVD or flash drive, to include trend logs and control software, shall be conducted whenever a software or programming change is made but no less frequently than monthly.

h.) Disk drive maintenance to include defragmentation shall be performed quarterly

i.) Operations and Maintenance contractor is responsible for software, licenses and security updates to all vendor provided systems devices.

*[[[These requirements may be enhanced to add requirements to keep logs or other tracking mechanisms for overrides or to establish Control System software access parameters language and adjusted to the need of the location.]]]*

#### ***C.35.4.2 Reporting***

The Contractor is responsible for notifying the Government if a sequence of operations or its implementation as a control program is not producing the desired results or is resulting in unnecessary energy use. The



Contractor is responsible for notifying the CO or their designee if any systems are running out of sequence or manually. All instances shall be reported to the CO or their designee immediately and documented in the monthly report. The Contractor is responsible for retaining an adequate level of expertise to manage the control systems. If the Contractor does not have a manufacturer trained or equivalent BAS operator onsite, the Contractor shall enter into a subcontract, including regular scheduled support (not merely support on a contingency basis), or remote access; with a firm that has these skills.

***C.35.5 Smart Building Technology [[[If the facility(s) covered by this Contract is involved in a Smart Building Innovation see Exhibit 8 for language and add it here and on the Table of Contents, otherwise mark reserved]]]***

***C.35.6 Ongoing Commissioning /Re-Tuning Technology [[[Note to Sec, writer; at the discretion of the property manager this requirement may be deleted due to the size of the building (a recommendation under 50,000 sf) since the building may not represent a significant percentage of our energy usage therefore not cost effective. In addition, if the facility(s) covered by this Contract is a high energy efficient buildings, this requirement may not be applicable.]]]***

The Contractor shall conduct the six step Re-Tuning procedure described in the Pacific Northwest National Laboratory (PNNL) (<http://retuningtraining.labworks.org/training/lms/>). The initial frequency of the Re-Tuning is semi-annually to coincide with the heating and cooling seasons. After completing two Re-Tuning cycles the CO or their designee in consultation with the Contractor will determine the appropriate frequency of the Re-Tuning effort based on the size and complexity of the facility. The contractor is required to submit evidence that the training has been completed and a report after each R-Tuning effort identifying what actions we taken because of the Re-Tuning.

## **C.36. Water Treatment**

### **C.36.1 General**

The Contractor shall provide equipment, chemicals, and services (including application) required to control corrosion, scale, algae, and bacterial growth in all HVAC equipment and systems throughout the building. The Contractor shall be responsible for conformity with all pertinent Local sanitation district regulations, air quality district regulations, and other environmental regulations. Water treatment shall be performed and safety equipment (e.g., emergency eyewash stations) maintained in accordance with OSHA standards.

### **C.36.2 Tolerances**

Water shall be kept within tolerance bands in accordance with Exhibit 9 Water Treatment.

### **C.36.3 Initial Report and Development of Program**

The Contractor shall perform a comprehensive initial water treatment analysis (laboratory analysis) within the first month of the Contract to assist in developing the water treatment plan. The Contractor shall propose a water treatment plan to be approved by the CO or designee.

### **C.36.4 Cooling Tower Water Management Plan**

The Contractor shall perform a comprehensive water treatment per the appendix in Exhibit J.9. This exhibit establishes mandatory standards for water in HVAC and domestic water systems in GSA facilities, along with information related to the intent of the standards and guidelines that in most circumstances can be used to construct a water treatment program.

### **C.36.5 Corrosion Monitoring**

*[[[Delete this provision if not applicable to the location and mark “Reserved.”]]]*

The Contractor shall install coupon racks, or an equivalent electronic monitoring system for corrosion, in condenser water loops, heating hot water loops, and the building main chilled water loop, if not already present, not later than 30 calendar days after submission of the water treatment plan (For the primary condenser water system, the installation of the water treatment monitoring system described elsewhere in this document meets this requirement). The Contractor shall propose the type and manufacture of the proposed coupon racks to be installed to the CO or their designee for final approval before installation. If coupon racks are present the Contractor may use such existing equipment, but is responsible for bringing it into conformity with all requirements in this document. The minimum quantity of coupons and frequency of inspections shall be described in the water treatment plan. Laboratory analysis of coupons shall be no less frequent than quarterly for major systems (e.g., primary building condenser and chilled water loops, as opposed to specialized systems serving limited areas), and annually for other systems. At a minimum, two coupon racks shall be installed for each loop, and used to monitor mild steel and copper. Coupon racks will be the property of the Government upon installation. The Contractor shall have responsibility for maintaining (and if necessary replacing) the coupon racks for the duration of the Contract. The liability threshold for repairs does not apply to this equipment; the Contractor has full responsibility. Acceptable corrosion rates are established in the most current Public Buildings Service Operations and Maintenance Standards. Molybdenum shall not be used in GSA buildings.

See Section C.42.3 Water-Based Fire Protection Systems, which references NFPA 25 for information regarding evaluating corrosion of water-based fire protection systems. Contractors during their inspection of water-based fire protection systems shall verify such systems are free from corrosion.

### **C.36.6 Monthly Testing**

The Contractor shall provide a qualified independent water treatment specialist to draw a set of water samples monthly. Tests shall be performed as described in the water treatment plan. Samples shall be analyzed and a monthly report containing all pertinent information, relative to the conditions found, shall be submitted to the CO or their designee with the monthly progress report. In facilities where makeup water is metered, makeup water quantities used shall be tracked and reported. Types and quantities of chemicals used shall be tracked and reported.

## **C.37. Oil Analysis and Oil Changes**

### **C.37.1 Periodic Oil Analysis**

The Contractor shall establish and implement an oil analysis program incorporating the manufacturer's recommendations. Documentation shall include periodic oil analysis tests to be performed at least annually, diagnostic standards, and thresholds for oil changes. Oil analysis shall be conducted to maintain a consistent methodology for data collection, analysis, and historical trending. Periodic oil analysis shall include, but is not limited to, chillers of 50 tons or greater cooling capacity. Periodic oil analysis shall be performed prior to annual maintenance requirements so that results may be considered in performing maintenance. When testing is performed, the Contractor shall submit a written report with the next monthly progress report. Where oil analysis indicates a need for corrective action, an appropriate work order shall be created in the CMMS and the appropriate corrective action taken by the Contractor.

### **C.37.2 Oil and Refrigerant Additives**

Oil and refrigerant additives shall not be used.



### ***C.38. Lamps and Ballasts***

The Contractor shall replace failed lamps, to include appropriate ballasts if required, with the most efficient products available in accordance with existing building standards defined by the P100 or CO or designee. In lieu of such standards, lamps shall be replaced with the most efficient products available matching type and color temperature. *[[[Regions may identify color rendering index (CRI) level and power factor here.]]]* The Contractor shall establish and implement a lamping and ballasts recycling program for fluorescent tubes and light bulbs in accordance with Environmental Protection Agency (EPA) and GSA standards.

The use of bulb crushers is strictly prohibited.

All handling, storage, labeling and disposal of mercury containing tubes and bulbs shall be in compliance with Universal Waste Rule guidelines (<http://www.epa.gov/osw/hazard/wastetypes/universal/index.htm>)

*[[[Specification drafter may want to be more specific about the facility standards.]]]*

The Contractor shall maintain the mercury content of all mercury-containing lamps below 75 pictograms per lumen hour, on weighted average, for all mercury-containing lamps acquired for the existing building and associated grounds. Screw-based compact fluorescent lamps may be excluded from this calculation if they meet the voluntary standards by NEMA. If the Contractor cannot find replacement lamps to meet this requirement while maintaining building standard lighting, the Contractor shall immediately bring this to the attention of the CO or designee. The Contractor shall maintain documentation of all purchases of mercury-containing lamps and provide the information within the monthly progress report to the CO or designee.

### ***C.39. Architectural and Structural Systems Maintenance***

*[[[Adjustments should be made to this Section in accordance with regional policy, and to ensure that the scope correlates with the scope of other Contracts. Add requirements for rekeying if that needs to be covered by this scope.]]]*

#### ***C.39.1 General***

The Contractor shall maintain, repair, replace, modify, and restore all of the architectural and structural components of the building. In general, these components include walls, floors, doors, windows, docks, levelers, lighting, and all items that are part of or otherwise associated with them. The Contractor shall conduct routine inspection and minor maintenance and repair of interior and exterior architectural and structural systems components. All replacement items and parts shall be either the same quality or better than the manufacturer's original parts.

#### ***C.39.2 Maintenance and Repair***

The Contractor shall perform all architectural and structural maintenance and repairs or replacements to all equipment, electrical and mechanical systems, structures, architectural finishes, and utilities, located on, within, or beneath, this facility's interior and exterior extending to the legal property line. The Contractor shall ensure the building is free of missing components or defects that could affect the safety, appearance, or intended use of the facility or could prevent any electrical, mechanical, fire protection and life safety, plumbing or structural system from functioning in accordance with its design intent. The Contractor shall use approaches that preserve and protect native plants and wildlife that is entrusted to the Government, and that support habitats for pollinators, including honey bees, native bees, birds, bats, and butterflies.

### ***C.39.3 Repair and Replacement Work***

Repair and replacement work shall be complete, including touch-up painting and operational checks. The quality of the work shall ensure that repaired areas are fully compatible with and match adjacent surfaces or equipment. All replacement items shall be consistent with design documents and match existing equipment in quality, dimension, and material, quality of workmanship, finish, and color.

### ***C.39.4 Painting***

Painting is considered “touch-up,” for purposes of this Contract, when it is to repair a specific damaged area of paint. Painting should extend to logical break points such as the floor ceiling corner, doorway etc. to avoid a patched look.

Repainting to correct for normal wear and tear to painted surfaces over time is not required. Restriping of parking areas, driveways, roads, and vehicle inspection areas is required where striping is damaged or worn in a specific location, but not for general wear and tear of a large area over time. Repairs to pavement are required where a specific location is damaged but not where an extensive area is degraded. Painting in mechanical areas needed for OSHA compliance, consistent equipment appearance, or other safety reasons is required. If the Contractor must disturb materials he suspects may contain lead-based paint, the Contractor must immediately report the condition to the CO or designee. The machinery rooms including floors and the equipment located within the machinery rooms shall be painted as necessary to maintain the appearance of the room and equipment. When painting, the contractor must comply with the ANSI color coding system outlined in the ASNI A13.1, Scheme for the Identification of Piping Systems, and maintain the identity (identification number) of the equipment.

### ***C. 39.5 Interior Signage and Directories***

The Contractor shall maintain and update building directories, to include electronic directories and tenant common corridor signage but not electronic directories that belong to our building tenants. The Contractor shall repair damaged interior or exterior signage in accordance with the repairs provisions in this document. Other changes to interior or exterior signage may be ordered from the Contractor as reimbursable items under the additional services provisions in this document.

### ***C. 39.6 Finishes Maintenance***

The Contractor shall ensure finishes are maintained to the manufacturer’s specifications and levels that preserve a professional appearance and the integrity of the protected surface. The Contractor shall provide touch-up paint on repaired surfaces that seamlessly matches the surface and condition prior to degradation and repair.

### ***C. 39.7 Historic Building Preservation***

***[[[Delete this provision if the buildings are not historic and mark “Reserved.”]]]***

The Contractor shall provide services that protect and preserve the historical integrity of the building. The Contractor shall consider any building 50 years old as historically significant, regardless of National Register status. The Contractor shall ensure any alteration of the building performed by the Contractor or their subcontractor protects the architectural integrity and compatibility with existing building structural accoutrements. The Contractor shall consult with the CO or their designee and obtain a copy, if available, of the building Historic Building Preservation Plan (HBPP) or Historic Structure Report (HSR) prior to any renovation work performed under this Contract on a building 50 years old or older. It may be possible that an HBPP has not been developed for the buildings at the time of this Contract award. In addition to the HBPP or

HSR, the Contractor shall obtain a copy of The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. These documents shall be followed for Government purposes in the preservation of buildings. The Contractor and CO or their designee shall examine the requirements of any applicable documents for maintenance recommendations and specifications. If a conflict exists between applicable documents and Contract requirements, the Contractor shall not proceed until directed to do so by the CO or designee. The Contractor shall protect any work of art (painting, sculpture, carving, etc.) in the project area or close vicinity from possible damage during any renovation to the structure.

*[[[Note to Spec Writer : Include this paragraph if there are any Fine Arts Collections in the building and mark reserved if there are not]]]*

*[[[C.39.8 The CO or their designee shall identify any artworks in the building that are part of GSA's Fine Arts Collection during Contract start-up phase. The Contractor shall operate the facility to protect the Fine Arts Collection from environmental and security risks, ensure artwork is not damaged during the normal operation and maintenance of the facility, and protect pieces of the Fine Arts collection if they are involved in special events, maintenance, facility renovations or repairs.]]]*

#### **C.39.8 Vertical Transportation and Associated Equipment**

*[[[If vertical transportation equipment maintenance is to be included in the Contract, adjust this Section accordingly. Also, if vertical transportation equipment maintenance is not included in this document, carefully review this scope against the vertical transportation equipment maintenance Contract to ensure that all requirements are accomplished by either one or the other Contract and are not duplicated.]]]*

*[[[Identify who will be responsible for maintaining light fixtures, ballasts, and lamps installed in elevator cars and within the ceilings of cars. The Contractor is not responsible for maintaining lighting within hoist ways.]]]*

The Contractor is responsible for maintaining fire protection equipment and systems and ventilation and exhaust systems within hoist ways, elevator lobbies, and elevator machine rooms. The Contractor shall provide assistance in performing elevator testing, including after normal work hour requirements. *[[[Identify number of elevator tests to be performed and estimated hours of assistance necessary.]]]*

The Contractor is responsible for maintaining lighting, electrical equipment not directly part of elevator systems, and HVAC systems associated with elevator machine rooms and systems. *[[[If any of this equipment is within the scope of the elevator maintenance Contract, adjust the language accordingly.]]]*

*[[[If any wheelchair lifts, hydraulic loading ramps or window washing scaffolding equipment are in the building, indicate who is responsible; maintenance responsibilities for these systems vary.]]]*

#### **C.39.9 Flag Procedures**

*[[[Regions use or delete if this function is performed by another Contractor.]]]*

The Contractor will raise, lower, and place at half-staff the United States Flag, Agency pennants, and other flags (POW flag). This service shall be provided when directed by the CO or their designee and shall comply with requirements in the Flag Policy.

## **C. 40. Repairs**

### **C.40.1 General**

*[[[Regions need to address the additional cost for repairs for emergency callbacks and repairs schedule after hours.]]]*

The Contractor shall perform reimbursable and non-reimbursable repairs as described in this document. Repairs are handled on a shared liability basis (See shared liability math example in C.40.3 Reimbursable Repairs). Relatively small value repairs (non-reimbursable repairs) are the responsibility of the Contractor in their entirety, and larger repairs (reimbursable repairs) shall be approved and funded by the Government for the cost amount above the Contractor threshold. If damage is caused by Contractor negligence, the Contractor shall be liable for the full cost of repair, any other provisions notwithstanding. The intent of this Contract is to ensure that most repairs will be accomplished by in-house Contractor personnel. However, the Government recognizes that occasionally there are certain specialized repairs that require specialized skills outside the skill sets of the in house O&M personnel. If the Contractor identifies a repair that they believe is of such a specialized nature that a specialized subcontractor is required to properly complete the repair, the Contractor shall provide written justification in advance, to the CO or designee, for approval of the need to use a subcontractor. The Contractor shall not use subcontractors to perform non-reimbursable repairs unnecessarily or with the intent of driving up the repair cost so the Government shall cover part of it. If approved, the cost of the subcontractor's labor and material will be treated as a repair part for the purposes of calculating the repair threshold. The subcontractor's cost shall be fair and reasonable and approved in advance by the CO or designee. All repairs shall use supplies, materials, and parts of the highest quality available that are appropriate for the repair of the given equipment or system. Any replacement parts used during the course of this Contract shall be of comparable or higher quality. Energy-consuming items shall be the most efficient in their class. The Contractor shall stock commonly used items and have a network of suppliers that will deliver ordered items without any delay. Any replacement motors shall be of premium efficiency. Whenever motors are replaced, motor size shall be recalculated and replacement motor selection shall reflect the appropriate size.

#### **C.40.2 Non-reimbursable Repairs**

*[[[The threshold for non-reimbursable repairs may be adjusted by the regions to meet their need. In regions where an established uniform non-reimbursable repair threshold has not been established, the following factors should be considered when determining the appropriate threshold for non-reimbursable repairs:*

*Non-reimbursable repairs should generally be limited to a maximum threshold of \$2,500.00 and a minimum threshold of \$300.00. Thresholds exceeding \$2,500.00 may increase Contract costs substantially and thresholds below \$300.00 may cause an unnecessary burden by increasing the workload necessary to process the additional payments. The threshold shall be set at a level high enough to cover the most commonly anticipated repairs for each facility. Knowing the type of equipment, approximate cost of repairing or replacing the most common system components likely to experience breakdown, as well as the age, condition and design reliability of these systems will better enable you to determine the most cost effective threshold.*

*Larger office space facilities (> 100K square feet) can often benefit from the \$2,500.00 maximum threshold, since the equipment and systems contained in these buildings tend to be more sophisticated and costly to repair, and having the repair costs covered under the monthly cost of the Contract lessens the administrative workload involved in processing the additional payments. This is particularly true in existing buildings that have been operational for a period of time. Regions may consider lowering this threshold in larger office facilities that are new or recently renovated (have undergone complete mechanical system renovation) where fewer repairs to major systems are anticipated and where use of a longer term Contract (up to 10 years) is not being considered.*

*Smaller office space facilities (< or equal to 100K square feet) may benefit from using a lower Minor Repair Threshold of \$300.00. Once again, the threshold should be set at a level high enough to cover the most commonly anticipated repairs for each facility. Knowing the type of equipment, approximate cost of repairing or replacing the most common system components likely to experience breakdown, as well as the age, condition, and design reliability of these systems will better enable you to determine the most cost-effective threshold.]]]*

A non-reimbursable repair is a repair requiring under \$ \_\_\_\_\_ *[[[Regions Insert threshold]]]* in cost for repair parts, materials only but no labor is cost included (including approved subcontracting costs). The cost of consumable parts and materials shall not be calculated as part of the Contractor's repair parts and material

costs. Non-reimbursable repairs are entirely the Contractor's responsibility with no reimbursement from the Government.

*[[[Regions may address applicability of markups on parts and material costs.]]]*

Non-reimbursable repairs shall be completed within \_\_\_\_\_ hours *[[[Insert hours]]]* of identification of the problem unless an extension is approved by the CO or designee. The work order shall be put into a status field in CMMS to indicate the nature of any delay, with appropriate remarks.

#### **C.40.3 Reimbursable Repairs**

Reimbursable repairs will be identified as single incident, not an accumulation of various repairs (bundling). If a repair exceeds the non-reimbursable repair cost threshold established above and has been approved and verified by the CO or designee, it becomes a reimbursable repair. Reimbursable repairs are reimbursable to the Contractor, once approved by the CO or designee, for the portion (shared liability) of the cost exceeding the non-reimbursable threshold of \$ \_\_\_\_\_ (See repair shared liability example below) *[[[Insert threshold. Note: This threshold shall be the same figure used to define the threshold for non-reimbursable repairs.]]]*

#### **C.40.4 Miscellaneous Work**

*[[[Specification drafter shall modify the number of hours to suit the needs of the building based on historical data. The Contractor will provide a plan on how they intend to balance PM, service call work, etc. with miscellaneous work items that come up during a work-day. Limit number of hours to the minimum amount that can be used productively Miscellaneous Work – escorting, etc.]]]*

The Contractor shall provide \_\_\_\_\_ hours and up to \$ \_\_\_\_\_ for parts and supplies. *[[[Insert number of hours and dollar figure]]]* per calendar month (hours and dollar amounts are not cumulative to succeeding months) when requested by the CO or designee, to accomplish discretionary work in the buildings covered by this Contract. No labor cost shall be included. The Contractor shall furnish the labor, tools and consumable materials as necessary to perform the work. Miscellaneous work may be required for work that makes use of any of the trades normally employed in performing operations and maintenance services under this Contract and does not include tasks associated with the performance of services covered under the scope of this Contract. The Contractor shall create and process CMMS work orders for all miscellaneous work, and accurately record hours of labor expended. *[[[If a CMMS is not used to track work order hours, describe an alternative procedure for tracking hours of labor.]]]*

#### **C.40.5 Repair Shared Liability Example:**

*[[[The region should consider a lower threshold limit as a best practice to negotiate a lower a contract cost. In this example, assume the non-reimbursable repair threshold is \$500.00.]]]*

A repair is identified and estimated by the Contractor to cost \$1,200.00 for repair parts and materials only. The CO or their designee will verify and approve both the need for the repair and the \$1,200.00 estimated cost of repair parts and materials. In this example, the Contractor will pay the first \$500.00 of the repair and GSA will pay the remaining \$700.00.

a. Total estimated approved cost for repair parts and materials to complete repair	\$1,200.00
b. Contractor's shared liability amount to be subtracted (same amount as the non-reimbursable threshold)	-\$
<u>500.00</u>	
c. Total to be paid by GSA to the Contractor for the repair	\$
<u>700.00</u>	

The required completion date for reimbursable repairs shall be established when the CO or their designee approves the work, as mutually agreed upon by the CO or their designee and the Contractor. The Contractor



shall attempt to complete work as promptly as feasible. Immediately upon identification of a reimbursable repair, the Contractor shall create a work order in the CMMS and defer it by putting it in a “hold” status.

*[[[Adjust this language to conform to regional CMMS usage.]]]*

#### ***C.40.6 Approval of Work***

When the Contractor determines that a repair is needed that exceeds the non-reimbursable repair threshold, the Contractor shall immediately notify the CO or designee. The CO or their designee shall issue a task order to the Contractor before the Contractor may proceed with the repair. The Contractor may defer performance of the reimbursable repair by placing the corresponding work order into a “waiting for funding” status from the time a valid proposal is given to the CO or their designee until the time an order is given to the Contractor. The time during which the work order is thus deferred will not count against the Contractor in calculating timeliness. The CO or their designee may prohibit the use of subcontractors if the CO or their designee determines the Contractor is unnecessarily driving up the cost of the work and the Contractor’s own employees have the skills necessary to perform the work.

#### ***C.40.7 Invoicing***

The Contractor shall invoice the Government for completed reimbursable repairs authorized orally, on a single itemized and consolidated invoice at the end of each month of performance. *[[[Regions may choose not to have the Contractor submit an itemized invoice.]]]* If the Contractor directly purchased parts or components, copies of receipts shall be attached. Reimbursable repairs authorized by task order may be invoiced separately upon completion and acceptance of work. Invoices shall also contain references to CMMS work order numbers.

#### ***C.40.8 Ordering Repairs from Outside Source***

The Government reserves the right to order repairs from an outside source. If the repair is a reimbursable repair, the Government will inform the Contractor of the outside source’s price, and deduct \$\_\_\_\_\_ *[[[Insert threshold. NOTE: This shall be the same figure used to define the threshold for non-reimbursable repairs]]]*, or the outside source’s price, whichever is less, from the Contractor’s payments.

#### ***C.40.9 Force Majeure (Uncontrollable events)***

Deficiencies or breakdowns caused by vandalism, misuse, abuse, or acts of God including natural disasters are fully reimbursable. The Contractor will be reimbursed under the additional services provisions described in this document or the Government will have the work performed by other means at no cost to the Contractor.

#### ***C. 40.10 Warranties***

The Contractor shall contact installers or manufacturers, as appropriate, for work that is covered under a warranty and maintain records of warranty service. The Contractor shall avoid actions that would invalidate a warranty, unless authorized by the CO or designee. If an installer or manufacturer fails to comply with the terms of a warranty, the Contractor shall immediately notify the CO or designee.

#### ***C.40.11 Quality of Materials and Replacement Parts***

Replacement components and materials shall be of similar or better quality than the components replaced, considering energy efficiency, operational characteristics, power quality, control and data acquisition, maintainability, and durability. The CO or their designee may require replacement of components with components from the same manufacturer to maintain consistency throughout the building. Materials and parts that are visible to building occupants shall be to building standard and maintain the same appearance as similar materials and parts in the occupied space. Components of control systems shall be replaced so as to maintain the tie-in to the control system with no degradation of data throughput, memory, point capacity, data acquisition, or programmability. Motors shall be replaced with premium efficiency motors as defined by the NEMA MG-1 standard or in compliance with Local utility guide demand-side management rebate guidelines

old transformers shall be replaced with NEMA-rated class one efficiency transformers in accordance with the NEMA TP-1 standard. Replacement of variable frequency drives shall be done in accordance with recommendations found in NEMA, Application Guide for AC Adjustable Speed Drive Systems. Energy Star-rated equipment shall be installed where available and when there is no engineering or operational reason not to select an Energy Star product.

## ***C. 41. Safety and Environmental Management***

### ***C. 41.1 General***

The Contractor shall use to the extent practicable, the safest and most environmentally friendly products and processes available. The Contractor shall be cognizant of and comply with all Federal, State, and Local laws and Regulations related to building management (permitting, inspection, testing and personnel safety; control of hazardous substances, certification) to include materials and associated systems used or removed in the performance of this contract. Contractor shall comply with all such requirements, including record keeping. The Contractor shall comply with all Federal, State, and Local environmental and safety laws and regulations that relate to the maintenance and operation of equipment and systems within the scope of this Contract. The Contractor will be responsible for any fines or penalties levied by any environmental or regulatory authority resulting from their action or inaction, (not actions or inactions from a third party or the government) and may be charged the cost as a performance deduction under the Adjusting Payments clause. The Contractor's maintenance, operations, materials and processes shall use green products and processes including, but not limited to products containing recycled content, environmentally sustainable products and services, bio-based products, and products and services that minimize the use of energy, water, and other resources.

### ***C. 41.2 Scheduling and Recordkeeping***

The Contractor shall maintain copies of all tests, certifications, permits and other required records, and provide copies to the CO and designee. In addition, all required safety and environmental tests; certifications, permits, and other procedures required in this document shall be scheduled in the CMMS work order system and documented in the CMMS or by other means if a CMMS is not available.

### ***C. 41.3 Refrigerants***

#### ***C.41.3.1 Control and Certification***

The Contractor shall control refrigerants and maintain records in accordance with EPA, GSA, and air quality management district standards. The Contractor shall take appropriate immediate action and report leaks to the CO or designee. The Contractor shall maintain and test refrigerant monitors, alarms and purge ventilation systems as part of the maintenance program. Testing shall use appropriate media to test sensors as well as alarm circuitry. Refrigerant control logs shall be updated as required, and a copy sent to the CO or designee. The Contractor shall also maintain a set of logs onsite and make this set of logs available to government inspection.

#### ***C.41.3.2 Certified Handlers***

Contractor employees who come into contact with refrigerants in the course of their duties shall be certified to handle such refrigerants (EPA Section 608 Technician Certification Program). If equipment containing chlorofluorocarbon (CFC) or hydro chlorofluorocarbon (HCFC) refrigerants is removed from operation under this Contract, the Contractor shall recover all refrigerant in the equipment, seal it in appropriate storage containers, reclaim and reuse it as directed by the CO or designee, or dispose of it within EPA guidelines. In the event of fines or penalties levied by the EPA or an AQMD, the Contractor may be charged the cost as a performance deduction under the Adjusting Payments clause.

#### **C.41.4 Local Air Quality Management Operating Permits**

The Contractor shall be familiar with the requirements of the Local Air Quality Management District (AQMD), and shall ensure operating permits for boilers; generators and other emissions-producing equipment regulated by the district are up to date and have copies available to the CO or designee. In the event of fines or penalties levied by an AQMD, the Contractor may be charged the cost as a performance deduction under the Adjusting Payments clause.

#### **C.41.5 Fuel Storage Tanks**

*[[[Add any specific State requirements.]]]*

The Contractor shall comply with the GSA Fuel Storage Tank Policy and all Federal, State, and Local regulatory requirements for the periodic inspection, monitoring, permitting, certification, registration, maintenance, personnel training and recordkeeping for underground and/or above ground storage tanks. Where the GSA Policy and regulatory requirements differ, the more stringent directive shall apply.

#### **C.41.6 Solid Waste Audit *[[[If these audits are performed under separate Contract, delete. If contracting separately for recycling, refer to the following link: <https://mysmartplans.gsa.gov/recycle/>]]]***

At the beginning of a base year Contract, the Contractor shall perform a solid waste audit of the building and submit the findings to the CO or their designee and the government's Solid Waste Program Manager. Based on the findings, the Contractor shall partner with the Government to set up a recycling program that is cost effective to the government and will maximize the amount of waste diverted from the landfill. Recycling Contractor shall participate in all established recycling programs for common items such as plastic, cardboard, glass, and paper products. The Government may perform solid waste audits at their discretion and the Contractor shall partner with the Government to implement best practices solid waste audit recommendations. (See Exhibit 3.)

#### **C.41.7 Polychlorinated Biphenyl (PCB) Control**

*[[[If there are no PCBs, delete this Section and mark as "Reserved."]]]*

The Contractor shall inspect all transformers containing polychlorinated biphenyls (PCBs) and maintain records of such inspections in accordance with State, Local, and EPA regulations. The CO or their designee shall be notified immediately if any such equipment is found to contain PCBs, or suspected to contain PCBs. Equipment verified to contain PCBs, except lighting ballasts, shall be labeled as containing PCBs. Any transformer leaks of PCBs shall be reported immediately to the CO or designee. The Contractor shall inspect all leaks in accordance with State, Local, and EPA regulations. The Contractor shall properly dispose of caulk that contains PCBs. The Contractor shall take immediate action to contain all leaks. There may be light ballasts containing PCBs in the buildings covered by this Contract. Replacement and proper disposal of all burned-out ballasts, including PCB ballasts, shall be the responsibility of the Contractor. Fluorescent lamps, batteries, and other items in any quantity subject to the Universal Waste Rules for Hazardous Waste Management and disposal shall be recycled or disposed of properly.

#### **C.41.8 Facility Hazards**

The Contractor shall assist in identifying facility health and safety hazards and report all hazards in writing to the CO or their designee on GSA Form 3614, GSA Notice of Unsafe/Unhealthful Workplace Conditions. The Contractor shall take immediate action to control hazards that present an imminent danger.

#### **C. 41.9 Workplace Safety**

The Contractor shall develop a site-specific occupational safety and health program specifically addressing applicable components of 29 CFR 1910 and 29 CFR 1926. The safety and health program shall be submitted to the CO or their designee for review and approval 30 days after award. By approving the program, GSA assumes no responsibility for the Contractor's occupational safety and health program.



#### **C.41.10 Electrical Safety**

The Contractor shall comply with National Fire Protection Association (NFPA) 70: National Electrical Code and NFPA 70E: Standard for Electrical Safety in the Workplace, when working on or around electrical equipment or systems or switchgear equipment. The Contractor shall ensure that any and all areas restricted to qualified personnel are secured and properly labeled.

#### **C.41.11 Fall Protection**

The Contractor shall develop specific fall protection procedures for work on roofs, equipment, and other areas at elevation. The Contractor shall ensure fall protection equipment is provided to their employees and that employees are adequately trained.

#### **C.41.12 Powered Platforms *[[[Remove and mark “Reserved” if this requirement is covered under another SOW.]]]***

The Contractor shall inspect, test, and maintain all permanently installed powered platforms in accordance with 29 CFR 1910.66, and provide copies of such certifications to the CO or designee.

#### **C.41.13 LockOut/TagOut**

The Contractor shall develop a lockout/tag out program in accordance with 29 CFR 1910.147. The program shall include all anticipated energy sources, including but not limited to, electric City, steam, pressurized fluids, and mechanical energy. The Contractor shall communicate the Lockout/Tagout program to all other affected Contractors.

#### **C.41.14 Confined Spaces**

*[[[Remove and mark “Reserved” if there are no confined spaces.]]]*

The Contractor shall identify and label all confined spaces in accordance with OSHA requirements. Contractor shall record all identified confined spaces in the CMMS as hazards.

*[[[If no permits are required for confined spaces, delete this paragraph.]]]*

The Contractor shall develop a confined space entry permit system for all permit-required confined spaces within 60 calendar days of commencement of the Contract.

#### **C.41.15 Asbestos Management**

*[[[Remove and mark “Reserved” if there is no possibility that asbestos ever existed in this facility. In cases where asbestos has a major impact on the ability to access equipment Regions may want to provide additional information for the Contractor along with the location of the Government Asbestos Management Plan]]]*

The Contractor shall be expected to occasionally perform Class III and Class IV asbestos work as defined in 29 CFR 1926.1101. The Contractor shall be prepared to deal with asbestos on a small-scale, short-duration basis to effect emergency repairs and to clean up small spills. The Contractor shall protect building tenants, visitors, and employees from asbestos exposure. The Contractor shall comply with applicable OSHA regulations and all applicable Federal, State, and Local asbestos regulations. The Contractor shall immediately become familiar with, comply with, and recommend any appropriate changes to the Government Asbestos Management Plan for the building. If the Contractor must disturb materials he suspects may contain ACM, the Contractor must immediately report the condition to the CO or designee. Contractor personnel who perform the abovementioned work shall have been appropriately trained in accordance with 40 CFR Part 763.

### ***C.41.16 Hazardous Materials***

#### ***C.41.16.1 Safety Data Sheets (SDS)***

The Contractor shall make material safety data sheets (SDS) available to their employees in accordance with 29 CFR 1910.1200. SDS shall also be made available to the CO or their designee on request. The Contractor shall prepare and submit a hazardous materials inventory as an appendix to the building operating plan. The inventory shall itemize all hazardous materials by specific type as sold with individual SDS and include information pertaining to approximate quantities of each type and exact locations where hazardous materials are to be stored on the premises.

#### ***C.41.16.2 Disposition of Hazardous Waste***

Hazardous Wastes not subject to the Universal Wastes Rule shall be managed in accordance with 40 CFR 260. Universal Wastes (fluorescent lamps, certain batteries and pesticides) in any quantity subject to the Universal Waste Rules shall be recycled or disposed of as Hazardous Waste. Preference is given to recycling of intact items.

#### ***C.41.16.3 Environmental Report***

The Contractor shall provide all necessary information required in this Section to comply with environmental and green purchasing reporting requirements, and agency sustainability goals in this specification. The Contractor shall submit to the CO or their designee the following reports.

*[[[Remove (a) if this requirement is accomplished under another SOW.]]]*

- (a) Waste Reports. The Contractor shall submit a quarterly report on waste handling activities to include disposal and recycling (See Section J, Exhibit 9). The report shall contain shipping information for hazardous and non-hazardous waste and be submitted by the 15<sup>th</sup> of each month and upon request by the CO or their designee. Report shall include the waste type, name and final disposition destination. All Hazardous and Universal Waste shipping documentation shall be maintained for the life of the building. If the Contractor performs non-hazardous solid waste management for the entire building, they shall also report on these solid waste and recycling activities.

The Contractor shall submit information on green purchasing practices specific to the performance of this contract. Records showing the monthly cost of green cleaning products and materials purchased shall be provided to the USDA and the CO or their designee by the Contractor so that this report can be submitted by the CO or their designee as required by the Resource Conservation and Recovery Act (RCRA), USDA, and EO 13514. Reportable information is provided in Section J, Exhibit 2 for Non-Bio-based products. The Contractor shall use products that meet the product standards for categories listed in Section C.41.16.4 'Key Sustainable Product (KSP) Standards'. For those items that are not listed as KSPs, the Contractor shall select from products from the EPA-designated (e.g. Comprehensive Procurement Guidelines [CPG]) and USDA designated in the BioPreferred Program (visit <http://www.biopreferred.gov/>), and all other factors (such as price, performance, and availability) being equal, the Contractor shall select the CPG item. For other purchases, unless the Contractor receives an exemption from the Contracting Officer or their designee, the Contractor shall select USDA designated in the BioPreferred Program (visit <http://www.biopreferred.gov/>), products over products with other sustainable attributes. Products designated under Federal sustainable product programs – USDA BioPreferred, EPA CPG, EPA Design for the Environment, and Department of Energy's EnergyStar and FEMP - can be found on [www.sftool.gov](http://www.sftool.gov). Sustainable products designated under third-party programs include but are not limited to Green Seal, EcoLogo, and Environmental Choice. Examples of green cleaning products that are available with environmental designations are found in Section J, Exhibit 18. This list is not all inclusive. For those categories of product not recognized by one of the aforementioned standard's, preference shall be given to products meeting the California Code of Regulations maximum allowable Volatile Organic Compounds

(VOC) levels for the appropriate cleaning product category(California Air Resource Board/California Code of Regulations (CCR), Title 17 CCR Section 94509 – (Topic cited; Standards for consumer products at [www.calregs.com](http://www.calregs.com)).

#### ***C.41.16.4 Key Sustainable Product (KSP) Standards***

Use of the KSP standards is mandatory for all contracts and task orders. The KSP's in this section are also located at (<https://sftool.gov/green-products/0>). The Contractor shall specify the brand name and product that shall be used to meet each applicable KSP standard. The Contractor shall provide the required data submittals (See Section J, Exhibit 19) to the CO or their designee prior to the start of each contract year. The CO's designee shall verify that the products submitted are compliant with these KSPs. The Contractor shall use standards listed in the Green Procurement Compilation <https://sftool.gov/greenprocurement> for other products not listed below.

Nylon Carpet

Standard: 10% post-consumer recovered content, NSF 140 Gold level

Interior Paint

Standard:  $\leq 50$  g/L VOCs, including colorants added at the point of sale (SCAQMD Rule 1113 standard)

Gypsum Board

Standard: Greenguard Gold certification *or* 0 g/L VOCs,  $\geq 80\%$  recycled content

Acoustical Ceiling Tiles

Standard: California Section 01350 standard for low-VOC materials, total recycled content  $\geq 20\%$ , recyclable in a closed loop process, USDA Certified BioPreferred; and

Environmental Product Declaration (EPD)

Concrete (Ready-Mix and Site-Mix)

Standard: Recycled content in the form of;  $\geq 25\%$  fly ash or  $\geq 15\%$  ground granulated blast-furnace (GGBF) slag

#### ***C.41.16.5 Exemptions***

Exemptions are required when construction products that meet the requirements above are (1) not reasonably available within a reasonable period of time; (2) fail to meet the performance standards set forth in the specification or fail to meet the reasonable performance standards of GSA; or (3) are available only at an unreasonable price, only then can the custodial Contractor use other types of products. In these cases the Contractor shall request an exemption from the CO or their designee. In all cases the Contractor shall use, to the extent possible, the safest and most environmentally friendly products.

#### ***C.41.16.6 Proof of Compliance***

The Contractor must, at all times during the performance of this contract, maintain a cut sheet or other documentation of compliance with product purchasing activities as stated within this specification to include Section J, Exhibits 2,4 and 19. The Contractor shall provide copies of such documentation to the CO or their designee as required or upon request.

#### ***C.41.16.7 Recycled Content Product Purchase Annual Reporting***

The Contractor shall provide reports, estimating the percentage of total recovered material used in Contract performance, including, if applicable, the percentage of post-consumer material content, to the CO or their designee in compliance with the Contractor schedule.

#### ***C.41.16.8 Non-Bio-based Products***

The Contractor shall submit a report of all non-bio-based products to include: Green Seal, Design for Environment (DfE), CPG, EcoLogo and Environmental Choice (low VOC, Non-Ozone Depleting), as well as non-green (Hazardous/Toxic products).

#### ***C.41.16.9 Bio-Based Products***

For categories of items that are EPA-designated (e.g. Comprehensive Procurement Guidelines [CPG]) and USDA designated in the BioPreferred Program (visit <http://www.biopreferred.gov/>), and all other factors (such as price, performance, and availability) being equal, the contractor shall select the CPG item. For other purchases, unless the contractor receives an exemption from the Contracting Officer, the contractor shall select USDA designated products over products with other sustainable attributes

#### ***C. 41.17 Boiler/Pressure Vessel Operation and Inspection Standards***

*[[[If these inspections are performed under separate Contract, change this to a reference that these inspections will be done separately.]]]*

***C.41.17.1 Boiler operation and Inspections*** shall be in accordance with applicable codes and regulations including but not limited to:

- a. ASME Boiler and Pressure Vessel Code.
- b. National Board Inspection Code.
- c. Environmental Protection Agency and Local AQMD requirements.
- d. ASME CSD-1, Control & Safety Devices for Automatically Fired Boilers.
- e. NFPA 85, Boiler and Combustible Systems Hazards Code.

#### ***C.41.17.2 Inspections and Tests***

Boiler inspections shall include internal and external (operating) inspections and tests described in Chapter 2, Inspection of Boiler and Pressure Vessels, of NBIC. The Contractor shall require the inspector to complete GSA Form 349 (Inspection Report of Boiler) or an equivalent approved form for each boiler inspected. The Contractor shall have unfired pressure vessels with design operating pressure in excess of 60 pounds per square inch (psi) and a capacity in excess of 15 gallons inspected annually. The Contractor shall complete GSA Form 350 (Inspection Report of Unfired Pressure Vessels) or an equivalent approved form for each unfired pressure vessel inspected. A GSA Form 1034 (Certificate of Inspection) or an equivalent approved form shall be completed and posted on or near the equipment. Inspections shall be made by inspectors certified by the National Board of Boiler and Pressure Vessel Inspectors, who shall be employed by an independent firm specializing in boiler and unfired pressure vessel inspections.

#### ***C. 41.17.3 Backflow Prevention Devices***

The Contractor shall maintain all existing backflow prevention devices and certify them as prescribed by Federal, State, and Local laws, ordinances, and regulations. If no Local requirement exists, a certified inspector shall inspect all existing backflow prevention devices on an annual basis, record the inspection as a work order in the CMMS and provide certification of proper operation to the CO or designee. While the Government will generally pass on to the Contractor backflow testing notices received from Local water districts or other Local authorities, the Contractor is responsible for timely completion and submission of such test results regardless of receipt of such notices. In addition to other requirements, backflow prevention devices used on water-based fire suppression systems shall be inspected, tested, and maintained in accordance with NFPA 25.

#### ***C.41.17.4 Potable Water Systems***

The Contractor shall comply with The Safe Drinking Water Act, PL 99-339, as amended, and the Environmental Protection Agency Safe Drinking Water regulations (40 CFR 141.43, Sections A and D), which address the quantity of lead allowable in new installations or repairs to existing drinking water systems and or plumbing. Potable water systems that are repaired, modified, serviced, or breeched in any way shall be disinfected and flushed as needed prior to returning the system to service. Contractor is required to comply with all Federal, State, and Local codes in the operation, treatment, and testing of potable water systems.

#### ***C.41.18 Labeling and signage***

The Contractor shall maintain the labeling of existing equipment, pipes, storage areas, containers, confined space, and workspaces as well as associated signage, in accordance with OSHA standards to ensure labels are visible and not obliterated. Any equipment, pipes, etc., newly installed by the Contractor require labeling and signage per OSHA standards shall be labeled immediately upon completion of the installation and maintained throughout the Contract period.

#### ***C.41.19 Roof Anchorage Points***

The Contractor shall provide for an annual inspection of designated roof anchorage points by qualified personnel. Anchorages shall be inspected in accordance with the anchor manufacturer's requirements and additional requirements contained in the installation certification. Copies of the inspection reports shall be provided to the CO or designee. If an area of suspicion is identified, the anchorage shall be tagged "out of service" and immediately reported to the CO or designee. ANSI/IWCA I-14 may be consulted for further guidance.

### ***C.42. Fire Protection and Life Safety Equipment and Systems***

#### ***C.42.1 General***

Each of the requirements listed below shall apply to all of the paragraphs in Section C.42

- a. The Contractor is responsible to utilize the latest edition of the applicable NFPA code or standard, in effect at the time of contract award, throughout the term of the contract.
- b. The Contractor shall ensure all fire protection and life safety systems and equipment are kept operational at all times, except while being tested or repaired.
- c. The Contractor shall ensure all maintenance and preplanned impairments of the fire protection and life safety systems and equipment have been authorized and approved by the CO or their designee prior to the Contractor performing any work.
- d. The Contractor shall utilize technicians that meet the applicable requirements in Section H15.3.
- e. The Government reserves the rights to have the Contractor remove any employee that poses a threat to the health, safety, or security of the building occupants.
- f. The Government reserves the rights to conduct any test or inspection it deems necessary to ensure all contract performance requirements are being met.
- g. The Contractor shall comply with all appropriate safety code requirements. If the Contractor encounters equipment that is in a condition that may endanger life or property, the Contractor shall immediately notify the CO or their designee of the condition requiring immediate action. Within 24 hours following the notification of the CO, the Contractor shall provide to the CO or their designee a written report of the hazardous condition and recommended corrective action.
- h. The Contractor is responsible for meeting the inspection and testing frequencies, test methods, and documentation requirement for each fire protection and life safety system referenced in the applicable NFPA code or standard.
- i. The Contractor is responsible for providing all tools, supplies, and equipment necessary to properly perform inspections, tests, and maintenance of the fire protection and life safety equipment and systems in accordance with applicable NFPA code or standard.
- j. The Contractor shall be responsible to leave areas where they perform work neat, clean, and orderly.

- k. The Contractor shall document all inspections, test results, and maintenance performed on the suggested inspection, testing, and maintenance forms referenced in the applicable NFPA code or standard. These completed forms shall be included with the Contractor's Monthly Progress Report.
- l. Any deficiency identified by the Contractor during a required inspection shall be entered into CMMS as a work order; evidence of correcting such deficiency, unless funding is not available, shall be provided with the subsequent Contractor's Monthly Progress Report after correction action is completed.

#### **C.42.2 Fire Alarm System Services**

*[[[Remove and mark "Reserved" if there is no fire alarm system or if this Section is covered under another SOW, identify ownership and responsibility of system.]]]*

Services include, but are not limited to; the performance, inspection, testing, and preventive maintenance or repair of a variety of fire alarm and notification systems, equipment and components such as manual alarm devices, smoke and heat detectors, tamper switches, pressure switches, water flow switches, remote and graphic annunciations, main fire alarm panel and components, voice alarm systems, speakers, horns, and other audible and visual devices, wiring circuits and junctions, supervising station alarm system transmission equipment, emergency power supplies and all other ancillary devices that operate related equipment (e.g., HVAC shut-down, dampers, elevator recall, door closing devices and door unlocking devices).

All fire alarm system inspections, tests, maintenance, and repairs performed under this contract shall comply with the NFPA 72, National Fire Alarm and Signaling Code.

Fire alarm system testing, maintenance and repair shall be performed during normal business hours when it does not interfere with building operations. When such testing, maintenance or repair will interfere with building operations; it shall be performed after normal business hours without additional costs to the government, unless approved otherwise by the CO or designee. The Contractor shall provide a fire watch in areas left unprotected or if the system is out of service for more than 4-hours in a 24 hour timeframe. The fire watch shall remain in place until the fire alarm system is completely restored during the performance of routine service and testing procedures. If the system cannot be restored through no fault of the Contractor's, a fire watch still shall be provided until the system is restored, however the Contractor may seek reimbursement for the fire watch with the COR or designee.

It is essential that the Contractor carefully schedule with the property manager and CO or their designee all non-emergency shutdowns of the fire alarm system and that back up protection be provided by the Contractor (e.g., arrangement of additional personnel stationed in the areas affected and at the fire alarm system control panel) any time that the fire alarm system is out of service for more than 4 hours. The affected portion of the system shall be tested to ensure that the protection has been properly restored.

**In no case shall the fire alarm system be left in a disabled condition without notifying the CO or their designee and providing a fire watch.**

#### **C.42.3 Water-Based Fire Suppression Systems**

*[[[Remove and mark "Reserved" if there is no water-based fire suppression system or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to; the performance, inspection, testing, and preventive maintenance or repair services of all mechanical devices, including valves, sprinklers, couplings, piping, hose connections, water motor gongs and alerting devices, tamper switches, pressure switches, water flow switches, standpipes, backflow preventers, private fire service mains, water storage tanks, fire pumps, and test headers.



All water-based fire extinguishing system inspections, tests, maintenance, and repairs performed under this contract shall comply with the NFPA 25, Inspection, Testing, and Maintenance of Water-Based Fire Extinguishing Systems.

Water-based fire suppression system testing, maintenance and repair shall be performed during normal business hours when it does not interfere with building operations. When such testing, maintenance or repair will interfere with building operations; it shall be performed after normal business hours without additional costs to the government, unless approved otherwise by the CO or designee. The Contractor shall provide a fire watch in areas left unprotected or if the system is out of service for more than 4-hours in a 24 hour period. The fire watch shall remain in place until the water-based fire suppression system is completely restored to service during the performance of any routine service and testing procedures. If the Contractor believes they were not able to restore sprinkler service due to circumstance outside of their control, the Contractor may request reimbursement for that portion or the fire watch from the CO or designee.

It is essential that the Contractor carefully schedule with the property manager and CO or their designee all non-emergency shutdowns of the sprinkler system and that back up protection be provided by the Contractor any time the sprinkler system is out of service for more than 4 hours. The affected portion of the system shall be tested to ensure that the protection has been properly restored.

**In no case shall any water based fire suppression system be left in a disabled condition without notifying the CO or their designee and providing a fire watch.**

#### **C.42.4 Fire-rated Door Assemblies**

*[[[Remove and mark "Reserved" if there are no fire-rated door assemblies or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to, the inspection, testing, and maintenance of all fire-rated door assemblies. All fire-rated door assemblies inspections, tests, and maintenance performed under this contract shall comply with the NFPA 80, Standard for Fire Doors and Other Opening Protectives. Please note that the inspection of fire-rated door assemblies shall also meet the requirements in NFPA 101, Life Safety Code.

#### **C.42.5 Fire Damper and Combination Fire/Smoke Dampers**

*[[[Remove and mark "Reserved" if there are no fire damper and combination fire/smoke dampers or if this section is covered under another SOW.]]]*

Services consist of but are not limited to, the inspection, testing, and maintenance of all fire dampers, radiation dampers, and combination fire/smoke dampers. All fire damper, radiation damper, and combination fire/smoke damper inspections, tests, and maintenance performed under this contract shall comply with the NFPA 80, Standard for Fire Doors and Other Opening Protectives. Please note that maintenance of combination fire/smoke dampers shall also meet the requirements contained in NFPA 105, Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives.

#### **C.42.6 Smoke Doors Assemblies**

*[[[Remove and mark "Reserved" if there are no smoke door assemblies or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to; the inspection, testing, and maintenance of all smoke door assemblies. All smoke door assemblies inspections, tests, and maintenance performed under this contract shall comply with the NFPA 105, Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives.

#### **C.42.7 Smoke Dampers**

*[[[Remove and mark "Reserved" if there are no smoke dampers or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to, the inspection, testing, and preventive maintenance of all smoke dampers. All smoke damper inspections, tests, maintenance, and repairs performed under this contract shall comply with the NFPA 105, Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives.

#### **C.42.8 Portable Fire Extinguishers**

*[[[Remove and mark “Reserved” if there are portable fire extinguishers or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to; the inspection, testing, and preventive maintenance of all portable fire extinguishers. All portable fire extinguisher inspections, tests, and maintenance performed under this contract shall comply with the NFPA 10, Standard for Portable Fire Extinguishers.

#### **C.42.9 Non-Water-Based Fire Extinguishing Systems**

*[[[Remove and mark “Reserved” if there are no non-water-based fire extinguisher systems or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to, the inspection, testing, and preventive maintenance of the following types of non-water-based fire extinguishing systems:

- a. Carbon dioxide extinguishing systems, NFPA 12, Standard on Carbon Dioxide Extinguishing Systems.
- b. Halogenated extinguishing systems, NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems.
- c. Dry chemical extinguishing systems, NFPA 17, Standard for Dry Chemical Extinguishing Systems.
- d. Wet chemical extinguishing systems, NFPA 17A, Standard for Wet Chemical Extinguishing Systems.
- e. Fire extinguishing systems, NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
- f. Clean agent fire extinguishing systems, NFPA 2001, Standard for Clean Agent Fire Extinguishing Systems.

#### **C.42.10 Smoke Control Systems**

*[[[Remove and mark “Reserved” if there are no smoke control systems or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to; the inspection, testing, and preventive maintenance of smoke control systems. All smoke control system inspections, tests, maintenance, and repairs performed under this contract shall comply with the NFPA 92, Standard for Smoke Control Systems.

#### **C.42.11 Emergency and Standby Power Systems**

*[[[Remove and mark “Reserved” if there are no emergency and standby power systems or if this section is covered under another SOW, Identify if outside load bank is required to perform testing]]]*

Services consist of, but are not limited to; the inspection, testing, preventive maintenance, and exercising of equipment per the manufacturer’s recommendations for the following types of emergency and standby power systems:

- a. Emergency power supply systems, NFPA 110, Standard for Emergency and Standby Power Systems.
- b. Stored electrical energy emergency and standby power systems, NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems.

#### **C.42.12 Emergency Lighting Systems and Exit Signage**



*[[[Remove and mark “Reserved” if there is no emergency lighting and exit signage or if this section is covered under another SOW.]]]*

Services consist of, but are not limited to; the inspection, testing, and preventive maintenance of emergency lighting systems, emergency lighting equipment, and exit signage. All emergency lighting systems, emergency lighting equipment, and exit signage inspections, tests, maintenance, and repairs performed under this contract shall comply with the NFPA 101, Life Safety Code.

### **C.43. Maintenance and Repair of Vertical Transportation Systems**

*[[[If elevators, lifts, dumbwaiters, escalators, or other vertical transportation equipment is to be included in the Contract, add the specification here or mark “Reserved” if not included. Clarify if the O&M Repairs Section language, including threshold amounts, applies to the vertical transportation system Section or if other provisions apply. Elevator maintenance programs shall conform to ASME A17.2 or latest, latest edition]]]*

### **C.44 Submittals Chart (Contractor Deliverables)**

*[[[NOTE TO SPEC WRITER: CO or their designee would provide any applicable submittals and dates for inclusion in the specification. Requirements are stated throughout the spec and this Section can be mark reserved. Note to spec writer. Blank “days” should be filled in to match # days in body of SOW.]]]*

DELIVERABLE	REF	DELIVERABLE DUE	Due Date	Rec'd
Existing Deficiency Inspection/Initial Deficiency List	C.4.3	Report due not later than ____ days after award of the Contract.		
Startup/Transition Phase including staffing plan, etc. <i>[Be sure to include all items]</i>	C.5.1	____ Days prior to Contract start date.		
Phase out transition.	C.6.1	On the last performance day of the Contract, Contractor must turn over keys and identification badges or cards.		
List of key personnel and emergency contact information, which may include subcontractor contacts as applicable.	C.8.1	The Contractor must develop and submit to the CO within ____ days of Contract award.		
Quality Control Program.	C.8.6	Develop and submit for approval ____ days after Notice of Award.		
Building Operating Plan.	C.9.1	Develop and submit for approval, ____ days after award		
Equipment inventory update.	C.10	The Contractor must update and verify the equipment inventory on an annual basis.		

Monthly Progress Reports.	C.11	On a monthly basis, not later than the fifth working day of the subsequent month.		
Progress Review Meetings	C.12	At the discretion of the CO or designee		
Equipment condition assessment.	C.13	On an ongoing basis during the performance of the Contract as requested.		
Establish Reference Library	C.15	Ongoing		
Review of design and construction documents.	C.16	Review as requested		
Provide Building Management Support Services	C.17	Upon Request		
Inspect Space Build outs	C.18	As required		
Emergency Shutdown Checklist	C.19	Posted in Mechanical / Electrical rooms		
Labeling Electrical Circuits [May be marked “Reserve” by region]	C.20	Ensure added or modified circuits are labeled.		
Energy and Water Efficiency	C.21.6	Operational Performance Targets Monthly Energy and Water Efficiency Use Plan Annual Energy and Water Efficiency Use Plan		
Emergency service request or callback after hours.	C.23.2	Respond to emergency service requests and after hour callbacks within ____ hours		
Urgent service request	C.23.4	Respond to urgent service requests within ____ hours		
Routine service request - response extension request.	C.23.5	Respond to routine service request within ____ hours.		
Preventive maintenance system.	C.35.1	At least 10 work-days prior to Contract start date.		
Initial report and development of water treatment program.	C.36.3	Within 25 days of the Contract start date.		
Monthly water treatment testing or makeup water	C.36.5	5 working days after the end of		

chemical tracking.		the month within the monthly progress report.		
Periodic oil analysis.	C.37.1	Next monthly progress report. Annually		
Lamps and ballasts containing mercury record	C.38	Report in accordance with Universal Waste Guidelines		
Repairs using subcontractors.	C.40	Must provide justification for subcontract need in advance.		
Warranties not honored by manufacturer.	C.40.1	Contractor must immediately notify CO if an installer or manufacturer fails to comply with the terms of a warranty.		
Scheduling and record keeping of permits, personnel safety, control of hazardous substances, certifications, and records	C.41.2	Furnish copies as requested.		
Refrigerant control and certification log.	C.41.3	Refrigerant control logs must be updated and inspected as required.		
AQMD operating permits.	C.41.4	Copies made available immediately upon request.		
Polychlorinated biphenyl (PCB) control transformer leaks.	C.41.6	Immediate notification.		
Workplace safety plan.	C.41.8	A safety and health plan must be submitted for review and approval within 30 days after award.		
Safety & Health Program Details	C.41.8	Written plan must be submitted within 30 days after Contract award.		
Electrical safety	C.41.9	Deficiencies must be reported within 30 days after Contract award.		
Confined space entry permit system.	C.41.13	The Contractor must develop a confined space entry permit system for all permit-required confined spaces within 30 calendar days of the Contract start.		

Hazardous materials: material safety data sheets – hazardous materials inventory.	C.41.16	SDSs must be made available on request. The Contractor must prepare and submit hazardous materials inventory as an appendix to the building operating plan. This must be updated and resubmitted annually by September 30 of each year.		
Boiler Inspection	C.41.16.2	Boilers must be inspected annually and Forms 349, 350 and 1034 completed as required.		
Backflow prevention devices – annual inspection certificate.	C.41.17	Annually.		
Green Purchase Reports -Bio-based as Required by FAR 52.223-2	C.41.16.6	Annually October 31		
Labeling and signage.	C.41.19	Labeling program per OSHA standards within 30 business days after start of Contract.		
On line at all times unless approval is given during maintenance periods.	C.42	Advance notification and approval per occurrence. This covers all fire system requirements.		
Qualification of employees (May 1989) paperwork.	H.1.3	As requested.		
The collection and submission of GSA Form 139, record Presence.	H.7	Submit each month with monthly report		
Green Purchase Reports Bio-based as Required by USDA - Non bio-based (see Exhibit 2)	H.12.5 H.12.6	Annually by 31 October Annually by 31 October		
Asbestos awareness training certification.	H.13	Training within 60 calendar days after start. Certify completion within 5 days of training.		
Submission of resumes for new employees.	H.15.5	The Contractor must submit resumes for all personnel prior to personnel beginning work.		

State licensing – if required.	H.15.6	Within 90 calendar days of beginning employment.		
Strike contingency plan (SCP) submission.	H.20	SCP must be submitted 5 calendar days prior to Contract start date and updated annually.		

***C.45 Federal Requirements:***

## Federal Requirements

<b><u>PUBLICATION</u></b>	<b><u>TITLE</u></b>		<b><u>PORTION</u></b>
EPACT 05	Title I Energy Efficiency Title IX Research and Development		All Applicable Sections of these Titles
EISA 07	Title III Energy Savings Through Improved Standards for Appliances and Lighting. Title IV Energy Saving and Buildings Industry. Title V Energy Savings in Government and Public Institutions.		All Applicable Sections of these Titles
Executive Order 13423	Strengthening Federal Environmental, Energy, and Transportation Management and all implementing guidance documents. <a href="http://edocket.access.gpo.gov/2007/pdf/07-374.pdf">http://edocket.access.gpo.gov/2007/pdf/07-374.pdf</a>		ALL
Executive Order 13514	Federal Leadership in Environmental, Energy, and Economic Performance <a href="http://edocket.access.gpo.gov/2009/pdf/E9-24518.pdf">http://edocket.access.gpo.gov/2009/pdf/E9-24518.pdf</a>		ALL
29 CFR Part 1910	OSHA General Industry Standards ( <a href="http://www.access.gpo.gov/nara/cfr/waisidx_06/29cfr1910a_06.htm">http://www.access.gpo.gov/nara/cfr/waisidx_06/29cfr1910a_06.htm</a> )		ALL

	<a href="#">ml</a> )		
40 CFR	Protection of the Environment <a href="http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?sid=cb067c6143d1efa48ac4d1222120a7b6&amp;c=ecfr&amp;tpl=/ecfr/browse/Title40/40tab_02.tpl">http://ecfr.gpoaccess.gov/cgi/t/text-idx?sid=cb067c6143d1efa48ac4d1222120a7b6&amp;c=ecfr&amp;tpl=/ecfr/browse/Title40/40tab_02.tpl</a>	All Applicable Sections of Chapter 1	
41 CFR Part 102-74, Subpart C. - FMR	Facility Management <a href="http://www.access.gpo.gov/nara/cfr/waisidx_06/41cfr102-74_06.html">http://www.access.gpo.gov/nara/cfr/waisidx_06/41cfr102-74_06.html</a>	ALL	
ANSI/ASCE A-1264.2-2006	<a href="http://www.ANSI.org">www.ANSI.org</a>	ALL	
GSA Green Purchase Plan	<a href="http://www.gsa.gov/portal/directive/d0/content/637046">http://www.gsa.gov/portal/directive/d0/content/637046</a>	ALL	
Guiding Principles for Sustainable Existing Buildings	<a href="http://www.wbdg.org/references/fhpsb_existing.php">http://www.wbdg.org/references/fhpsb_existing.php</a>	Section 3-5	
Bio Based Products	<a href="http://www.biopreferred.gov/BioPreferred/faces/pages/DocumentBrowser.xhtml">http://www.biopreferred.gov/BioPreferred/faces/pages/DocumentBrowser.xhtml</a>	ALL	
Comprehensive Procurement Guidelines (CPG)	<a href="http://www.epa.gov/cpg/about.htm">http://www.epa.gov/cpg/about.htm</a>	ALL	
Property Managers Child Care Desk Guide	<a href="http://gsa.gov/graphics/pbs/property_managers_guide.pdf">http://gsa.gov/graphics/pbs/property_managers_guide.pdf</a>	ALL	
Green Products Compilation Database	<a href="http://sftool.gov">sftool.gov</a>	ALL	
Bio-based Products Certification and Procurement Clauses	Click to download: BiopreferredspecialexamplesfromUSDAcontractsMay2014.pdf <a href="http://www.biopreferred.gov/BioPreferred/faces/pages/DocumentBrowser.xhtml#">http://www.biopreferred.gov/BioPreferred/faces/pages/DocumentBrowser.xhtml#</a>	ALL	
Key Sustainable Products	PBS Order 1096.1, Dec 18, 2014 See the CO or designee for copy of document	ALL	
Presidential Memorandum, June 20, 2014 entitled: "Creating a Federal Strategy to Promote the Health of Honey Bees"	<a href="http://www.whitehouse.gov/the-press-office/2014/06/20/presidential-memorandum-creating-federal-strategy-promote-health-honey-b">http://www.whitehouse.gov/the-press-office/2014/06/20/presidential-memorandum-creating-federal-strategy-promote-health-honey-b</a>	ALL	

and Other Pollinators.”			
GSA IT Policies	<a href="http://www.gsa.gov/directives">http://www.gsa.gov/directives</a>	ALL	

## **D. PACKAGING & MARKING**

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**RESERVED**

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## **E. INSPECTION & ACCEPTANCE**

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**RESERVED**

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## **F. DELIVERIES OR PERFORMANCE**

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**RESERVED**

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## **G. CONTRACT ADMINISTRATION DATA**

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**RESERVED**

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## H. SPECIAL CONTRACT REQUIREMENTS

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**H.1. Security** *[[[Tenants that require security clearance that exceeds HSPD shall reimburse GSA for actual cost incurred to obtain and renew credentials for Contractor personnel]]].*

**H-1.1 Security Requirements and Personal Identity Verification Procedures (Non-Classified Contract)**

FAR 52.204-9 PERSONAL IDENTITY VERIFICATION OF CONTRACTOR PERSONNEL (SEPT 2007)

- a. The Contractor shall comply with Agency personal identity verification procedures identified in the Contract that implement Homeland Security Presidential Directive-12 (HSPD-12), Office of Management and Budget (OMB) guidance M-05-24 and Federal Information Processing Standards Publication (FIPS PUB) Number 201.
- b. The Contractor shall insert this clause in all subcontracts when the subcontractor is required to have routine physical access to a Federally-controlled facility and/or routine access to a Federally-controlled information system.

**H-1.2 GSAR 552.237-70 Qualification of Offerors (MAY 1989)**

- a. Offers will be considered only from responsible organizations or individuals now or recently engaged in the performance of building service Contracts comparable to those described in this solicitation. In order to determine an Offeror's qualifications, the Offeror may be requested to furnish a narrative statement listing comparable Contracts which it has performed; a general history of its operating organization; and its complete experience. An Offeror may also be required to furnish a statement of its financial resources; show that it has the ability to maintain a staff of regular employees adequate to ensure continuous performance of the work; and, demonstrate that its equipment and/or plant capacity for the work contemplated is sufficient, adequate, and suitable.
- b. Competency in performing comparable building service Contracts, demonstration of acceptable financial resources, personnel staffing, plant, equipment, and supply sources will be considered in determining whether an Offeror is responsible.
- c. Prospective Offerors are advised that in evaluating these areas involving any small business concern(s), any negative determinations are subject to the Certificate of Competency procedures set forth in the Federal Acquisition Regulation.

**H-1.3. GSAR 552.237-71 Qualifications of Employees (MAY 1989)**

- a. The Contracting officer or a designated representative may require the Contractor to remove any employee(s) from GSA controlled buildings or other real property should it be determined that the individual(s) are either unsuitable for security reasons or otherwise unfit to work on GSA controlled property.
- b. The Contractor shall fill out and cause each of its employees performing work on the Contract work to fill out, for submission to the Government, such forms as may be necessary for security or other reasons. These forms shall be completed electronically unless that would create a hardship for the individual. Upon request of the Contracting Officer, the Contractor and its employees shall be fingerprinted.
- c. Each employee of the Contractor shall be a citizen of the United States of America, or an alien who has been lawfully admitted for permanent residence as evidenced by Alien

Registration Receipt Card Form I-151, or, who presents other evidence from the Immigration and Naturalization Service that employment will not affect his immigration status.

#### ***H-1.4. Suitability Determinations***

- a. All Contract employees requiring routine unescorted access to Federally-controlled facilities and/or information systems for more than 6 months (Regular Employees) will be required to undergo a suitability determination before a facility identification card is issued. Prior to the time that an identification card is issued, such Regular Employees will be required to comply with normal facility access control procedures, including sign-in, temporary badging, and escorted entry, as applicable.
- b. Failure of a Regular Employee to receive a favorable suitability determination shall be cause for removal of the employee from the work site and from other work in connection with the Contract.
- c. Contract employees working less than 6 months (Temporary Employees) may, at the Government's option, be required to undergo a lesser form of suitability determination. Prior to the time that an identification card is issued, if at all, such Temporary Employees will be required to comply with normal facility access control procedures, including sign-in, temporary badge, and escorted entry, as applicable.
- d. Temporary Employees who have not received a favorable suitability determination shall be escorted by government employees at all times while in non-public space, as directed by the CO or their designee.
- e. The Government, at its sole discretion, may grant temporary suitability determinations to Regular or Temporary Employees. However, the granting of a temporary suitability determination to any such employee shall not be considered as assurance that a favorable suitability determination will follow.
- f. The CO or their designee shall provide the Contractor with required forms for obtaining necessary clearances. The Contractor shall be required to cause such forms to be returned to the Government for processing not later than 14 days following being provided by the Government.
- g. The Contractor shall be responsible for planning and scheduling its work in such a manner as to account for facility access issues. Difficulties encountered by the Contractor in gaining access to facilities by its employees and subcontractors shall not be an excuse to any Contractor performance under the Contract.

#### ***H-1.5. Compliance with Security Requirements***

- a. The Contractor shall comply with all GSA and tenant Agency security requirements in the building(s) where work is being performed.
- b. When a controlled personnel identification access system is used by a tenant Agency at a site where work is performed, the tenant Agency will be responsible for providing any required access credentials. Credentials shall be displayed at all times or as otherwise required by the tenant Agency.

The Contractor shall be responsible for maintaining satisfactory standards of employee competency, conduct, appearance, and integrity and shall be responsible for taking such disciplinary action with respect to its employees as may be necessary.

### ***H-1.6. Safeguarding Sensitive Data and Information Technology Resources***

In accordance with FAR 39.105, this section is included in the contract. This section applies to all users of sensitive data and information technology (IT) resources, including awardees, contractors, subcontractors, lessors, suppliers and manufacturers. The following GSA policies must be followed. These policies can be found at <http://www.gsa.gov/directives> or <https://insite.gsa.gov/directives>.

1. CIO P 2100.1 GSA Information Technology (IT) Security Policy
2. CIO P 2100.2B GSA Wireless Local Area Network (LAN) Security
3. CIO 2100.3B Mandatory Information Technology (IT) Security Training Requirement for Agency and Contractor Employees with Significant Security Responsibilities
4. CIO 2104.1A GSA Information Technology IT General Rules of Behavior
5. CIO 2105.1 B GSA Section 508: Managing Electronic and Information Technology for Individuals with Disabilities
6. CIO 2106.1 GSA Social Media Policy
7. CIO 2107.1 Implementation of the Online Resource Reservation Software
8. CIO 2160.4 Provisioning of Information Technology (IT) Devices
9. CIO 2162.1 Digital Signatures
10. CIO P 2165.2 GSA Telecommunications Policy
11. CIO P 2180.1 GSA Rules of Behavior for Handling Personally Identifiable Information (PII)
12. CIO 2182.2 Mandatory Use of Personal Identity Verification (PIV) Credentials
13. CIO P 1878.2A Conducting Privacy Impact Assessments (PIAs) in GSA
14. CIO IL-13-01 Mobile Devices and Applications
15. CIO IL-14-03 Information Technology (IT) Integration Policy
16. HCO 9297.1 GSA Data Release Policy
17. HCO 9297.2B GSA Information Breach Notification Policy
18. ADM P 9732.1 D Suitability and Personnel Security The contractor and subcontractors must insert the substance of this section in all subcontracts.

## ***H.2. Identification Credential***

- a. Upon receipt of favorable suitability determination as indicated in this document, each employee of the Contractor will be issued an identification credential. At all times while working on the Contract, a Contract employee, including subcontractor employees, shall have in his or her possession the specific Government identification credential issued to him or her by the Government. The identification credential shall be displayed and be visible at all times while on Government property. The CO or designee, Government law enforcement, or security person shall periodically verify passes of Contractor employees with their personnel identification. Contractor employees shall comply with security verification procedures at all times.
- b. The Contractor shall ensure that every Contract employee has a Government issued identification credential before the employee enters on duty. As required by the Government, the Contractor shall make his employees available for photo identification badges, on a schedule to be worked out with the CO or designee. The Government will make the identification credentials after a favorable security determination has been received for the Contractor's employees. Each identification credential shall have an expiration date and Contractor employees shall sign each badge at the time of photographing.
- c. The Contractor shall be responsible for ensuring that all identification credentials are returned to the CO or their designee whenever his employees leave the Contract (when the Contract has been completed, employees leave the company, or employees are dismissed or terminated). The Contractor shall notify the CO or their designee whenever employee badges are lost.
- d. The Contractor will be responsible for paying the Government for replacement credentials at the current cost per badge.

## ***H.3. Escort Requirements***

It may be necessary to escort temporary Contract employees who do not have favorable preliminary or final suitability determinations and shall work in federally controlled space. In those cases, all uncleared Contract employees shall be escorted in nonpublic space by a Government employee or another responsible cleared Contract employee who is approved by the CO or designee. Other Government agencies may have specific Agency security requirements for their own space that may only allow escort by Government employees or those designated by their Agency. Government employees or approved cleared Contract employees who provide escorts for uncleared Contract employees shall always be in close proximity and within eyesight of the uncleared Contract employee. The Contract government escort shall watch uncleared employees and remain with uncleared Contract employees for the entire time they are in the building and or federally controlled space. Uncleared employees cannot be left alone or out of eyesight at any time they are in nonpublic space. A cleared and approved escort may not allow several uncleared Contract employees to be in Federally controlled space, that is not within close proximity and within eyesight at all times. A cleared and approved escort may not allow multiple uncleared employees in non-public space on different parts of one floor or different floors at the same time. Any security violation of escort requirements by a cleared and approved Contract employee will result in the immediate removal from the Contract of all Contract employees involved, i.e., escorts and uncleared escorted Contract employees. Also, violations of escort requirements by Contract employees in accordance with security requirements may be grounds for termination of the Contract.



#### ***H.4. Standards of Conduct***

The Contractor shall be responsible for maintaining satisfactory standards of employee competency, conduct, appearance, and integrity and shall be responsible for taking disciplinary action with respect to his employees as necessary. The Contractor is responsible for ensuring that his employees do not disturb papers on desks, open desk drawers or cabinets, or use Government telephones, except as authorized. Each employee is expected to adhere to standards of behavior that reflect favorably on his or her employer and the Federal Government. No smoking is allowed in the building.

#### ***H.5. Removal from Contract Work***

- a. As provided in the clause entitled "Qualifications of Employees," the Contracting officer or a designated representative may require the Contractor to remove any employee(s) from GSA controlled buildings or other real property should it be determined that the individual(s) is either unsuitable for security reasons or otherwise unfit to work on GSA controlled property. This shall include, but not be limited to, instances where an employee is determined, in the Government's sole discretion, to be incompetent, careless, insubordinate, unsuitable, or otherwise objectionable.
- b. When the Government deems the employee's continued employment to be contrary to the public interest, inconsistent with the best interests of security, or when the employee is identified as a potential threat to the health, safety, security, general well-being, or operational mission of the facility and its population.
- c. The CO may also request the Contractor to immediately remove any employee from the work site if it is determined that individuals are being assigned to duty who have been disqualified for either suitability or security reasons or who are found to be unfit for performing duties during their tour of duty.
- d. Contractor employees who are removed from Contract work shall be required to leave the work site immediately.
- e. The Contractor shall comply with any removal request. For clarification, a determination to remove an employee will be made for, but is not limited to, incidents involving the most immediately identifiable types of misconduct or delinquency as set forth below:
  1. Failure to receive a suitability determination, temporary clearance, or clearance from GSA or a tenant Agency.
  2. Violation of Federal, State, or Local law.
  3. Violation of the Rules and Regulations Governing Public Buildings and Grounds, 41 CFR 101-20.3. This includes the carrying or possession of explosives or items intended to be used to fabricate an explosive or incendiary device.
  4. Neglect of duty, including sleeping while on duty, unreasonable delays, or failure to carry out assigned tasks, conducting personal affairs during official time or refusing to render assistance, or to cooperate in upholding the integrity of the security program at the work site.
  5. Falsification or unlawful concealment, removal, mutilation, or destruction of any official documents or records, or concealment of material facts by willful omissions from official documents or records.

6. Disorderly conduct, use of abusive or offensive language, quarreling, intimidation by words or actions, fighting, or participation in disruptive activities that interfere with the normal efficient operations of the Government.
  7. Theft, vandalism, immoral conduct, or any other criminal actions.
  8. Selling, consuming, or being under the influence of intoxicants, drugs, or substances that produce similar effects while in or on federally controlled property.
  9. Improper use of Government identification.
  10. Unauthorized use of communication equipment on Government property.
  11. Violation of security procedures or regulations.
  12. Violation of Title 18, U.S.C., Section 930, which prohibits the knowing possession or the causing to be present of firearms or other dangerous weapons in Federal facilities and Court facilities.
- f. The CO or their designee will make all determinations regarding the removal of any employee from work site, except under certain conditions. When a CO or their designee is not available, either during the day or after hours, or in situations where a delay would not be in the best interest of the Government or is identified as a potential threat to the health, safety, security, general wellbeing, or operational mission of the facility and its population, the CO or their designee will have the authority to immediately remove the Contract employee from the work site.
  - g. Law enforcement officers of the Department of Homeland Security/Immigration and Customs Enforcement/Federal Protective Service (DHS/ICE/FPS) will have the authority to immediately remove any Contract employee from the work site who is found to be in violation of any of the items mentioned above and where a delay in removal would not be in the best interest of the Government or security or is identified as a potential threat to the health, safety, security, general wellbeing, or operational mission of the facility and its population. The CO or their designee will be notified as soon after the incident as practical or at the beginning of the next business day if an action happened after hours. The CO or their designee will make all official notifications to the Contractor. In the event of a dispute, the CO or their designee will make a final determination. Specific reasons for removal of an employee will be provided to the Contractor in writing by the CO or designee.
  - h. The Contractor is responsible for providing replacement employees in cases where Contract employees are removed from working at the work site or on the Contract.

#### ***H.6. Sensitive but Unclassified (SBU) Building Information***

- a. GSA Contractors that do not have HSPD-12 compliant clearances cannot obtain Sensitive but Unclassified (SBU) information (Privacy Act data, building information, and financial information) through GSA's IT systems.
- b. Contractors and prospective bidders with a need to know that do not have HSPD-12 clearances and access rights to GSA IT systems can be provided SBU building information, drawings, etc., in accordance with GSA Order 3490.1A, which provides for the dissemination of paper and electronic SBU building information for all Federally controlled space (owned, leased, and delegated). *[[[Note to Spec Writer: For more information on SBU visit the following website <https://insite.gsa.gov/portal/content/553542.1111>.]]]*
- c. For more information on SBU visit the following website SBU information includes, but is not limited to:

- 1) Paper and or electronic documentation of the physical facility information.
  - 2) Building designs (such as floor plans).
  - 3) Construction and renovation or alteration plans and specifications.
  - 4) Equipment plans and locations.
  - 5) Building operating plans.
  - 6) Information used for building service Contracts and or Contract guard services.
- d. For all GSA controlled facilities, any other information considered a security risk shall be considered covered under this category.
  - e. All SBU building information, either in electronic or paper format, shall have specific imprinting on each page to designate it as Government property and indicate the prohibition of copying, dissemination, and distribution.
  - f. Contractors authorized to receive SBU information shall provide the following identification:
    - 1) A copy of a valid business license.
    - 2) Verification of a valid DUNS Number.
    - 3) A valid IRS Tax ID Number.
    - 4) A valid State driver's license with photograph.
  - g. Contractors shall sign a Document Security Notice when they receive SBU information.
  - h. Contractors shall be responsible for safeguarding SBU information. At the completion of work, secondary and other Disseminators shall be required to turn over their Document Security Notice dissemination records to GSA to be kept with the permanent files.
  - i. Authorized Contract users shall destroy all SBU information and documents when no longer needed. Destruction shall be done by burning or shredding hardcopy, and or physically destroying CDs, deleting and removing files from the electronic recycling bins, and removing material from computer hard drives using a permanent erase utility or similar software.
  - j. All authorized Contract users of SBU building information shall notify the GSA Disseminator in writing that they have properly disposed of the SBU building information and documents.
  - k. The GSA Disseminator shall maintain all records of SBU building information disposal (along with the signed Document Security Notices) in accordance with the GSA system of keeping long-term records and plans. All Document Security Notices and Records of Disposal shall be kept with the permanent files.

### ***H.7. Recording Presence***

Each Contract employee shall sign in when reporting for duty and sign out when leaving at the end of the workday and follow card access requirements as directed by the CO or designee. The Contractor shall accumulate GSA Form 139 (Record of Time of Arrival and Departure from Building) or other designated form for use in recording presence each calendar week, certify in writing on each form that the information shown is true and correct and, and within \_\_\_\_ calendar days of week's end, *[[[Insert timeframe]]]* turn them over to the CO or designee.

### ***H.8. Government Forms***

The various Government forms mentioned in this document such as personal history forms, sign-out forms, inspection forms, etc., may be obtained from the CO or designee.

#### ***H.9. Other Contractors***

The Government may undertake or award other Contracts for additional work, and the Contractor shall fully cooperate with such other Contractors or Government employees. The Contractor shall carefully schedule his own work, in conjunction with the additional work, as may be directed by the CO or designee. In addition, the Contractor shall not commit or permit any act that will interfere with the performance of work by another Contractor or by Government employees.

#### ***H.10. Ordinances, Taxes, Permits, and Licenses***

Without additional expense to the Government, the Contractor shall fully comply with all Local, City, State, and Federal laws, regulations, and ordinances. The Contractor will also be liable for all applicable Federal, State, and Local taxes and shall obtain and pay for all permits and licenses governing performance under the Contract.

#### ***H.11. Discrepancy in the Specifications***

In any case of discrepancy in the specifications, the matter shall be immediately submitted to the CO. The decision of the CO as to the proper interpretation of the specifications shall be final in accordance with the Disputes Clause of this Contract.

### ***H. 12. Affirmative Procurement Program (APP)***

#### ***H.12.1 Standards***

The Contractor shall use safe and environmentally friendly products as referenced throughout this specification. Green products and processes include, but are not limited to bio-based products, products containing recycled content, environmentally preferable products and services, and otherwise environmentally friendly products and services that minimize the use of energy, water, and other resources. Chemical concentrates that require dilutions are preferable compared to ready-to-use products and should be used whenever possible. Dilution control equipment should be employed to ensure correct dilutions of concentrates and to protect workers from exposure to concentrated chemicals.

Products designated under federal sustainable product programs - USDA BioPreferred, EPA CPG, EPA Design for the Environment, EcoLogo and Department of Energy's EnergyStar and FEMP - can be found on [www.sftool.gov](http://www.sftool.gov). Sustainable products designated under third-party programs include but are not limited to Green Seal™ and Environmental Choice. For those categories of product not recognized by one of the aforementioned standard's, preference shall be given to products meeting the California Code of Regulations maximum allowable Volatile Organic Compounds (VOC) levels for the appropriate cleaning product category (California Air Resource Board/California Code of Regulations (CCR), Title 17 CCR Section 94509 – (Topic cited; Standards for consumer products at [www.calregs.com](http://www.calregs.com)).

Products including, but not limited to, cleaners, adhesives, sealants, solvents, and replacement fixtures and equipment - if applicable, must meet the sustainability standards for products listed in the Green Products Compilation ([sftool.gov](http://sftool.gov)) see Exhibit 4. With the exceptions listed below. The Green Products Compilation lists all of the products that Federal agencies are required by statute to purchase green:

- a. Green Seal standard GS-34 shall apply to degreasers
- b. Green Products Compilation ([sftool.gov](http://sftool.gov)) shall apply to industrial and institutional cleaning products [this covers concentrate issue]. The California Code of Regulations maximum allowable VOC levels for the appropriate product category (California Air Resource Board/California Code of Regulations (CCR), Title 17 CCR Section 94509 – (Topic cited; Standards for consumer products at [www.calregs.com](http://www.calregs.com))).

#### ***H.12.2 Reporting***

Contractor shall track the following green purchasing elements and report on purchases as specified in the environmental reporting section and Exhibit 2 of this specification.

#### ***H.12.3 Recycle Content Certification***

In accordance with the FAR 52.223-9, Certification and Estimate of Percentage of Recovered Material Content for EPA-Designated Items purchased for the performance of work with this Contract, the Contractor shall provide to the CO or their designee the required certification and estimate at Contract completion.

### ***H.13. Asbestos Awareness Training***

*[[[Include for buildings that contain asbestos or where it has been presumed. If no asbestos could possibly be found in your facility, remove language and annotate Table of Contents as “RESERVED.”]]]*

The Contractor shall ensure that all employees, including replacement workers, receive asbestos training and refresher training in accordance with CFR 40-763 and 29 CFR 1910. The Contractor shall follow all instructions for each asbestos class job as outlined in 29 CFR 1910. The training shall be conducted, at no additional expense to the Government, at least 60 calendar days after the start date of the Contract. The Contractor shall submit written certification to the CO or their designee within 5 days of the completion of training.

### ***H.14. Uniforms***

All trade workers shall wear a uniform with the Contractor's logo while working within the building.

### ***H.15. Personnel Qualifications***

#### ***H.15.1 Personnel Training***

The Contractor shall establish training program to assure employees working in a Federal building have the knowledge, skills and abilities to perform the work required by this Contract. The Contractor shall provide training and/or document training that conforms to the core competencies of the Federal Buildings Personnel Training Act of 2010 and provide documentation to the CO or designee.

##### ***H.15.1.1 Re-Tuning Training***

The Contractor must ensure that all Mechanical Engineers, Mechanical Supervisors, Operating Engineers, HVAC Mechanics, and Control Technician employees, including replacement workers, receive Building Re-Tuning Training, (<http://retuningtraining.labworks.org/training/lms/>), a 5-6 hour on line course and refresher training every two years in accordance with the Federal Buildings Personnel Training Act of 2010. The training must be conducted, at no additional expense to the Government, at least 60 calendar days after the start date of

the Contract. The Contractor must submit written certification to the CO or their designee within 5 days of the completion of training for each employee identified above.

### ***H.15.2 Qualifications of Project Manager and Onsite Supervisory Personnel***

*[[[Note Project Manager and Onsite Supervisor can be the same person.]]]*

#### ***H.15.2.1 Qualifications of Project Manager***

The Project Manager shall possess at a minimum at least 5 years of recent (within the past 7 years) experience in the management and supervision of building mechanical maintenance operations for buildings of the approximate size and characteristics of the buildings to be covered by this Contract. A detailed resume containing the information specified in this document shall be submitted to the CO or their designee for approval prior to the assignment of the project manager to the Contract. Both new and replacement project manager's shall meet these qualification standards. Minimally, the resume shall contain:

- a. The full name of the proposed project manager.
- b. A detailed description of the previous 7 years' employment history of the proposed project manager.
- c. The names and addresses of the companies for whom the proposed project manager worked for the past 7 years, along with the names and telephone numbers of the immediate supervisors.

#### ***H.15.2.2 Qualifications of Onsite Supervisor***

The Onsite Supervisor shall also possess at least 5 years of recent (within the past 7 years) experience in directing operation and maintenance of equipment in a supervisory capacity for equipment of the approximate size, complexity, and other characteristics of the equipment to be operated and maintained under this Contract. A detailed resume containing the information specified in this document shall be submitted to the CO or their designee for approval prior to the assignment of any supervisor to the Contract. Both new and replacement onsite supervisors shall meet these qualification standards. Minimally the resume shall contain:

- a. The full name of the proposed supervisor.
- b. A detailed description of the previous 7 years' employment history of the proposed supervisor.
- c. The names and addresses of the companies for whom the proposed supervisor worked for the past 7 years, along with the names and telephone numbers of the immediate supervisors.

### ***H.15.3 Qualifications of Technicians***

#### ***General Requirements***

Technicians engaged in the work to be accomplished under this contract, except for general maintenance workers and laborers, must possess at least 5 years of recent (within the past 7 years) experience in the operation and maintenance of equipment and systems comparable in complexity to systems covered by this contract. All personnel or sub-contractor personnel must possess all required registrations, certifications and licenses required by State and local jurisdictions, and any specific requirements noted below. The Contractor shall provide to the CO or their designee documentation of the certificates of training, licenses, and permits for all new employees not later than 7 days prior to that person beginning work under the terms of this contract. The Contractor shall ensure that all certificates of training, licenses, permits, and bonds are current and valid. All offers must include documentation and proof of any required certifications (e.g., including certification number and expiration date) and qualifications for each employee.

#### ***H.15.3.1 Qualifications of Fire Alarm System Technicians***

- a. Technicians performing contract work involving the inspection, testing, and preventive maintenance or repair of fire alarm systems shall be certified by the National Institute for Certification in Engineering

Technologies (NICET) and possess at least a NICET Level 2 (Associate Engineering Technician) in Fire Protection Engineering Technology, Fire Alarm Systems. The Contractor shall submit to the CO or their designee the NICET level certification number and expiration date for each field technician and inspector responsible for performing fire alarm system preventative maintenance and repair services required under the terms of this contract.

- b. Technicians modifying the programming software of the fire alarm system shall also be factory trained and certified by the system manufacturer for the specific type and brand of fire alarm system being serviced. The Contractor shall submit to the CO or their designee the factory trained certification number and expiration date for each specific manufacturer's equipment for each technician responsible for performing programming of the fire alarm system.

#### ***H.15.3.2 Qualifications of Water-Based Fire Suppression System Technicians***

Technicians performing contract work involving the inspection, testing, and preventive maintenance or repair of water-based fire suppression systems shall be certified by the National Institute for Certification in Engineering Technologies (NICET) and possess at least a NICET Level 2 (Associate Engineering Technician) in Fire Protection Engineering Technology, Inspection, and Testing of Water-Based Systems. The Contractor shall submit to the CO or their designee the NICET level certification number and expiration date for each field technician and inspector responsible for performing water-based fire suppression system preventative maintenance and repair services required under the terms of this contract.

#### ***H.15.3.3 Qualifications of Dry Chemical and Wet Chemical Extinguishing System Technicians***

Technicians performing contract work involving the inspection, testing, and preventive maintenance of dry chemical and wet chemical extinguishing systems shall be trained in the manufacturer requirements and have passed a test confirming the individual's knowledge and competence on these systems. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the manufacture or testing organization confirming the technician has been trained and passed a test, for each field technician and inspector responsible for performing dry chemical and wet chemical extinguishing system preventative maintenance and repair services required under the terms of this contract.

#### ***H.15.3.4 Qualifications of Clean Agent Fire Extinguisher System Technicians***

Technicians performing contract work involving the inspection, testing, and maintenance of clean agent fire extinguisher systems shall be trained in all aspects of safety related to the systems and possess a current training certificate for inspecting, testing, and maintaining these components from a manufacturer or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of clean agent fire extinguisher systems required under the terms of this contract.

#### ***H.15.3.5 Qualifications of Halogenated Extinguishing System Technicians***

Technicians performing contract work involving the inspection, testing, maintenance, decommissioning and removal of halogenated extinguishing systems shall be trained in all aspects of safety related to halon systems and possess a current training certificate for inspecting, testing, and maintaining these components from a manufacturer or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, maintenance, decommissioning and removal of halogenated extinguishing systems required under the terms of this contract.

#### ***H.15.3.6 Qualifications of Carbon Dioxide Extinguishing System Technicians***



Technicians performing contract work involving the inspection, testing, maintenance of carbon dioxide extinguishing systems shall be trained all aspects of safety related to carbon dioxide extinguishing systems, the operation and functions performed, and possess a current training certificate for inspecting, testing, and maintaining these components from an equipment manufacturer, installation company, or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the equipment manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of carbon dioxide extinguishing systems required under the terms of this contract.

#### ***H.15.3.7 Qualifications of Ventilation System Fire Extinguishing System Technicians***

Technicians performing contract work involving the inspection, testing, maintenance of fire extinguishing systems shall be trained and possess a current training certificate for inspecting, testing, and maintaining ventilation systems from an equipment manufacturer. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the equipment manufacture confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of fire extinguishing systems required under the terms of this contract.

#### ***H.15.3.8 Qualifications of Smoke Control Technicians***

Technicians performing contract work involving the inspection, testing, and maintenance of smoke control systems shall be trained and possess a current training certificate for inspecting, testing, and maintaining these components from a manufacturer or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of smoke control systems required under the terms of this contract.

#### ***H. 15.3.9 Qualification of Fire Damper, Smoke Damper, and Combination Fire/Smoke Damper Technicians***

*[[[Remove and mark "Reserved" if there are no fire and combination fire/smoke dampers or if this section is covered under another SOW.]]]*

Technicians performing contract work involving the inspection, testing, and maintenance of fire dampers, smoke dampers, radiation dampers, and combination fire/smoke dampers shall be trained and possess a current training certificate for inspecting, testing, and maintaining these components from an equipment manufacturer or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the equipment manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of fire dampers, smoke dampers, radiation dampers, and combination fire/smoke dampers required under the terms of this contract.

#### ***H.15.3.10 Qualifications of Fire-rated and Smoke Door Assemblies Technicians*** *[[[Remove and mark "Reserved" if there are no fire doors and opening protectives or if this section is covered under another SOW.]]]*

Technicians performing contract work involving the inspection, testing, and maintenance of fire-rated door assemblies and smoke door assemblies shall be trained and possess a current training certificate for inspecting, testing, and maintaining these components from an equipment manufacturer or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee he

certification document and expiration date, issued by the equipment manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of fire-rated door assemblies and smoke door assemblies required under the terms of this contract.

#### ***H.15.3.11 Qualifications of Portable Fire Extinguisher Technicians***

Technicians performing contract work involving the preventive maintenance and recharging of portable fire extinguishers shall be trained and possess a current training certificate for the specific type and brand of portable fire extinguisher being serviced or possess a current training test certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the manufacture or testing organization confirming the technician has been trained and passed a test, for each field technician and inspector responsible for performing dry chemical and wet chemical extinguishing system preventative maintenance and repair services required under the terms of this contract. Please note that these requirements do not apply to persons performing 30-day (i.e., monthly) inspections to determine if the unit is in place, charged, and ready for use.

#### ***H.15.3.12 Qualification of Emergency and Standby Power System Technicians***

*[[[Remove and mark "Reserved" if there are no emergency and standby power systems or if this section is covered under another SOW, Identify if outside load bank is required to perform testing]]]*

Technicians performing contract work involving the inspection, testing, and maintenance of emergency and standby power systems shall be trained and possess a current training certificate for inspecting, testing, and maintaining these components from an equipment manufacturer or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the equipment manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of emergency and standby power systems required under the terms of this contract.

#### ***H.15.3.13 Qualifications of Emergency Lighting Equipment and Exit Signage Technicians***

*[[[Remove and mark "Reserved" if there is no emergency lighting and exit signage or if this section is covered under another SOW.]]]*

Technicians performing contract work involving the inspection, testing, and maintenance of emergency lighting equipment and exit signage shall be trained and possess a current training certificate for inspecting, testing, and maintaining these components from an equipment manufacturer or a certificate by an organization acceptable to the CO. The Contractor shall submit to the CO or their designee the certification document and expiration date, issued by the equipment manufacture or testing organization confirming the technician has been trained, for each field technician and inspector responsible for performing the inspection, testing, and maintenance of emergency lighting equipment and exit signage required under the terms of this contract.

#### ***H.15.3.14 Qualifications of HVAC Technicians***

All HVAC personnel designated to work on, operate, maintain, and (or) repair HVAC equipment or systems shall maintain a minimum of 16 hours of continuing education annually from a NATE, HVAC Excellence, or UA Star recognized provider program. All HVAC personnel designated to work on, operate, maintain, and (or) repair HVAC equipment or systems shall possess one or more of the following certifications:

- a. North American Technician Excellence (N.A.T.E.) HVACR Service Technician Certification
- b. HVAC Excellence Professional Level Certification
- c. UA Star HVACR Mastery Certification

#### ***H.15.3.15 Qualifications of AMS, BAS Technicians***

All personnel involved in the operation, adjustment and maintenance of all AMS, BAS, and EMS systems must be trained and qualified. The Contractor must provide to the CO or their designee documentation of the level of experience, including any certificates of training, for all employees who will be involved in this function. Technicians modifying AMS, BAS, and EMS systems must be factory trained and currently certified for the operating system, including software version, of the particular BAS and AMS systems and must provide documentation of this certification to the CO or designee.

#### ***H.15.3.16 Qualifications of Electrical Technicians***

Technicians performing Contract work involving the inspection, testing, and maintenance of the electrical switch gear must meet the qualification requirements of the American National Standards Institute/International Electrical Testing Association ETT-2000, Standard for Certification of Electrical Testing Technicians and hold at least a Level 3 or 4 (See Exhibit 13).

The Contractor shall provide documentation to the CO or their designee on qualifications identified in this standard. Certification can be obtained through; the ANSI/NETA Certification program (<http://www.netaworld.org/press-release/251>) or Electrical Testing Technician Certification Institute (<http://www.ettci.org/>).

#### ***H.15.4 Submission of Resumes for New Employees***

The Contractor shall submit to the CO or their designee the resumes of all personnel before they begin work during the performance periods of the Contract. The CO or their designee may deny permission to employ personnel if qualifications indicate a material degradation from the skill levels indicated in the Contractor's proposal for the Contract, or if skills or reliability concerns are such that the CO or their designee believes the protection of building equipment may be jeopardized.

#### ***H.15.5 State Licensing***

*[[[Specifications drafter may modify this in accordance with the requirements of the State in which work is to be performed, e.g., if the State has unproductive licensing requirements that have little quality assurance value. However, be sure to require any licensing required subject to a statute where the Federal Government has waived sovereign immunity, e.g., Clean Water Act, Clean Air Act.]]]*

All personnel shall be licensed and certified, or become licensed and certified within 90 calendar days of beginning employment, to perform work within their normal duties, where such licensing is required by the State for non-Federal locations. Contractor personnel shall also conform to all other licensing and certification requirements as described elsewhere in this document or in the Public Buildings Service Operations and Maintenance Standards.

#### ***H.15.6 Compliance with Federal, State, and Local Codes***

The Contractor shall comply with all applicable Federal, State and Local laws, regulations and codes. The Contractor is responsible for determining which requirements are applicable, and complying appropriately; the Contractor may ask advice of the CO or their designee in this regard. GSA also has a policy of voluntary conformity to certain State and Local code requirements even when permission or approvals from Local regulators are not required; the Contractor shall ask the advice of the CO or their designee when such issues arise.

### ***H.16. Government-Furnished Materials***

*[[[Regions may add items as appropriate. Delete items not applicable to your facilities.]]]*

The following items are furnished by the Government:

- a. Electrical power at existing outlets for the Contractor to operate equipment that is necessary in the conduct of its work.
- b. Hot and cold water as necessary, limited to the normal supply provided in the building. No special heating or cooling of the water will be provided.
- c. Space in the building, including locker rooms, if available. Any existing equipment within GSA space, such as lockers, tables, benches, chairs, etc., placed within the building by the Government may be used by the Contractor during the term of the Contract, provided authorization is received from the CO or designee. This space and equipment shall be kept neat and clean and returned to the Government at the expiration of the Contract in reasonably the same condition as at the time of entering into the Contract.
- d. Space in the building for the storage of an inventory of supplies and equipment that will be used in the performance of work under the Contract. The Contractor shall maintain this space in a clean, neat, and orderly condition. Under no circumstances may the Contractor store flammable or explosive liquids (naphtha, gasoline, etc.) in the building. The Government will not be responsible in any way for damage or loss to the Contractor's stored supplies, materials, replacement parts, or equipment.
- e. Space in the building, when available, and furniture and furnishings (to include telephones for restricted use) for a supervisor's office to be used for official business only in the performance of this Contract. If the Government supplies telephones, they shall only be used for communication related to the Contract. The Contractor or the Contractor's employees shall not use Government property in any manner for any personal advantage, business gain, or other personal endeavor.

### ***H.16.1 Requirements for Network Connection***

Government-furnished network equipment and computer hardware must be used in all cases for PBS IT systems. Network equipment- includes any equipment that has IP routing and switching functionality.

- Computer hardware- includes, but is not limited to servers, PCs, laptops and their peripherals (monitors, mice and keyboards).
- Proprietary system hardware/software can be vendor provided, but is subject to network and system testing, review and approval for connection to GSA's network and acceptance of the PBS CIO.

**Government Furnished Equipment** - PBS CIO will make every effort to provide one desktop and/or one laptop to newly integrated Building Automation Systems (to the GSA network) sites for the purposes of giving new GSA users access to the building monitoring and control systems. Please note: availability of hardware is depending on the availability of budgeted funds dedicated for this purpose, which may or may not be renewed on an annual basis. Existing GSA workstation refreshes will still be coordinated through regional local OCIO's office. No hardware (workstations, servers, switches) will be provided unless an approved network diagram is submitted.

### **Use of Government Information Technology**

Contractor personnel requiring access to GSA's Network shall comply with all Federal Information Technology (IT) regulations regarding Trusted Internet Connection (TIC) in conjunction with PBS and GSA Chief In-

formation Officer (CIO) IT policies, i.e., all PBS IT systems needing network connectivity must reside on the GSA network.

**Reference documentation related to building monitoring and control systems (BMC)** - Please reference the Technology Policy for PBS-Owned Buildings Monitoring and Control Systems and Building Technologies Technical Reference Guide for guidance related to the technical integration of building monitoring and control systems (BMC) to the GSA network and within its GSA's information technology (IT) environment.

### ***H.17. Contractor-Furnished Materials***

*[[[Regions may add items as appropriate. Delete items not applicable to your facilities, as appropriate; e.g. phone lines, fax machines, computers, copiers, software.]]]*

- a. The Contractor shall provide all labor, services, supplies, material, and equipment necessary to efficiently and effectively perform the requirements of this Contract, except as explicitly stated within this document.
- b. The Contractor shall provide at his or her expense an onsite computer with broadband Internet service or a fax machine and services with receiving and sending capability in order to receive service requests via fax.

### ***H.18. Additional Services Indefinite Quantity Provisions***

#### ***H.18.1 General***

The CO or their designee may order additional services at his or her discretion. Additional services may include any services related to O&M and repairs, systems upgrades, system operation, or tenant services within covered facilities but not covered within basic services (i.e., not already a requirement of the Contract). *[[[An example of this is when modification to the contract is in order when new equipment will either raise or lower the level of effort required by the contractor.]]]*

#### ***H.18.2 Price Proposal for Additional Services Work***

At the request of the CO or designee, the Contractor shall provide a price proposal to accomplish an additional services job within 48 hours of the request. The price proposal shall follow the pricing guidelines described in this document. Price proposals for additional services become firm fixed price on acceptance and order by the Government. Although price negotiation and determination of price reasonableness is made on the basis of labor, materials, and subcontract costs following the pricing guidelines described in this document, the price accepted is not adjusted after completion of work to actual man-hours or actual materials cost.

#### ***H.18.3 Pricing***

The Contractor's price proposal for an Additional Services job shall follow the guidelines described below.

#### ***H.18.4 Parts and Materials***

If parts or materials are required for a project, the Government may provide the parts or materials, or the Contractor may be asked to provide the parts and materials. Parts and materials shall be priced at estimated actual cost marked up by the standard coefficient in the price schedule if stated. *[[[Adjust as necessary in accordance with how allowable markup level is treated in the Contract.]]]* The CO or their designee may accept a different markup rate for parts and materials if the Contractor can demonstrate unusual costs or difficulties in obtaining the parts or materials.

*[[[Adjust Price Schedule language if this has a different title or if such rates are not used in the Contract.]]]*

#### **H.18.5. Labor**

Price proposals shall use the labor rates established in the price schedule, unless work is subcontracted. The labor categories in the price schedule correlate with the categories in the Service Contract Act Directory of Occupations. The rate will be determined by the nature of the work, not the usual job classification of the individuals performing the work.

#### **H.18.6 Subcontracts**

*[[[Adjust the language if language other than standard coefficient is used in the price schedule or if there is no established markup rate.]]]*

If work is to be subcontracted, the subcontracted part of the work is to be priced at actual cost to the Contractor, marked up by the standard coefficient in the price schedule.

#### **H.18.7 Cost Documentation**

If the Contractor provides the parts and materials, or if work is subcontracted, the Contractor shall furnish on request copies of invoices, vendor quotes, or receipts, either with the Contractor's proposal or as substantiating documentation with the Contractor's invoice after completion of work.

#### **H.18.8 Competitive Bids**

If a single part or component, or a single type (line item) of parts, components, or materials for a project is anticipated to equal or exceed *[[[\$2,500]]*, the CO or their designee may require that the Contractor obtain three bids from suppliers and include documentation of these bids with his proposal. If subcontract work is anticipated to cost more than *[[[\$2,500]]*, the CO or their designee may require that the Contractor obtain three bids from potential subcontractors and include documentation of these bids with his proposal.

#### **H.18.9 Method of Ordering and Invoicing**

The CO or their designee may order work priced at less than *[[[\$2,500]]* orally. The CO or their designee shall issue a Task Order (GSA Form 300) for work costing *[[[\$2,500]]* or more.

#### **H.19. Award Fee**

*[[[Regions may use award fees at their discretion. In accordance with FAR 16.404, award-fee provisions may be used in fixed-price Contracts when the Government wishes to motivate a Contractor and other incentives cannot be used because Contractor performance cannot be measured objectively. See FAR 16.404 for conditions that shall be met prior to using this type of Contract.]]]*

#### **H.20. Strike Contingency Plan (SCP)**

The Contractor shall prepare a Strike Contingency Plan (SCP) to be used in the event of a strike by his employees. The SCP shall be submitted to the CO or their designee 5 calendar days prior to Contract start date and updated annually. At a minimum, the SCP shall include the following information:

- a. Support Personnel: The SCP shall describe in detail how the Contractor shall staff the building to provide the services defined in this document in the event of strikes by his employees. This includes HSPD-12.
- b. License and Certifications: The SCP shall describe in detail how the Contractor will provide personnel that meet experience requirements, assuring the Government that all temporary or replacement employees (including subcontractor employees) shall meet the experience and license requirements defined in this document.

### ***H.21. Occupancy Emergency Plan (OEP)***

The Government's Occupant Emergency Plan (OEP) is used by the CO or their designee during building emergencies. Designated Contractor personnel, including, the onsite supervisors, shall be thoroughly familiar with the Government's OEP and shall be trained by the Contractor to fully understand their responsibilities relative to each emergency plan. The Contractor shall participate in fire and other emergency drills. The Contractor shall be required to perform the services required by the Contract and as identified by the CO or their designee to the extent allowed during all emergency situations, including, but not limited to fires, accident and rescue operations, Contractor personnel strikes, civil disturbances, natural disasters, and utility service outages.

### ***H.22. Contractor Pandemic Plan***

The Government is required by the National Strategy for Pandemic Influenza Preparedness and to have a plan that safeguards its employees and provides for continued operations in the event of an influenza pandemic. The Contractor shall also prepare a plan that outlines the steps that they must take to prevent and reduce the spread and mitigate the potential effect of an influenza pandemic on facilities operations. Given the unpredictable length and severity of a pandemic, the Contractor's plan shall link their planned actions to the periods and phases established the World Health Organization for a pandemic cycle. For information on the phases of a pandemic cycle see [http://www.who.int/csr/disease/avian\\_influenza/phase/en/](http://www.who.int/csr/disease/avian_influenza/phase/en/). The plan shall be submitted to the CO or his/her designee within thirty (30) calendar days of the start of the Contract. See components of Pandemic Planning at <http://www.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/basic.pdf>

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## i. Contract Clauses

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52.223-1 Bio-based Product Certification.

52.223-2 Affirmative Procurement of Bio-based Products Under Service and Construction Contracts.

***NOTE TO SPEC WRITER:** For the purpose of reporting, the Contractor is responsible for submitting their annual biobased report using the following web site <https://www.sam.gov/>*

### **52.223-3 Hazardous Material Identification and Material Safety Data**

52.223-5 Pollution Prevention and Right-to-Know Information.

52.223-7 Notice of Radioactive Materials.

52.223-9 Estimate of Percentage of Recovered Material Content for EPA-Designated Items.

52.223-10 Waste Reduction Program.

52.223-11 Ozone-Depleting Substances.

52.223-15 Energy Efficiency in Energy-Consuming Products.

52.223-17 Affirmative Procurement of EPA-designated Items in Service and Construction Contracts.

**The following clauses must be included in all contracts where contractors may require access to sensitive data, or use GSA information technology (IT) resources.**

52.204-2, Security Requirements

52.204-9, Personal Identity Verification of Contractor Personnel

52.224-1, Privacy Act Notification

52.224-2, Privacy Act

52.239-1, Privacy or Security Safeguards

552.204-9, Personal Identity Verification Requirements

552.236-75, Use of Premises

552.239-70, Information Technology Security Plan and Security Authorization

552.239-71, Security Requirements for Unclassified Information Technology Resources

**J. List of Attachments**  
**(List of documents, exhibits and Other Attachments)**

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***EXHIBIT 1 – QUALITY ASSURANCE PLAN (QASP)***

***EXHIBIT 2- Green PURCHASING REPORT***

***Non Bio-based Report***

***Bio-based Report***

***EXHIBIT 3 – SOLID WASTE AUDIT REPORT***

***EXHIBIT 4 – SUMMARY OF ENVIRONMENTALLY SUSTAINABLE PRODUCT ATTRIBUTES and OFFERINGS***

***EXHIBIT 5 – BUILDING INFORMATION SHEET***

***EXHIBIT 6 – MONTHLY REPORT TEMPLATE***

***EXHIBIT 7 – BUILDING OPERATING PLAN TEMPLATE***

***EXHIBIT 8 – SMART BUILDING***

***EXHIBIT 9 – WATER TREATMENT***

***EXHIBIT 10 – OPERATIONAL PERFORMANCE TARGETS***

***EXHIBIT 11 – ENERGY AND WATER EFFICIENCY USE PLAN***

***EXHIBIT 12 – ENERGY AND WATER EFFICIENCY MONTHLY REPORT***

***EXHIBIT 13 –ANNUAL ENERGY& WATER EFFICIENCY REPORT***

***EXHIBIT 14 – QUALIFICATIONS OF ELECTRICAL TESTING TECHNICIANS (ETT)***

***EXHIBIT 15 – MISCELLANEOUS BEST PRACTICES***

***EXHIBIT 16 – INVENTORY/CMMS***

***EXHIBIT 17 –PREVENTIVE MAINTENANCE GUIDES***

***EXHIBIT 18- SOLID WASTE and RECYCLING REPORT***

***EXHIBIT 19 – KEY SUSTAINABLE PRODUCTS (KSP)***

# EXHIBIT 1

## J.1. Quality Assurance Surveillance Plan (QASP)

CONTRACT No. G S - P - - -

*[[[The specification writer shall develop a Quality Assurance Surveillance Plan (QASP) based on the Contractor's QCP and the equipment and systems specific to each building. Many services are common to all GSA buildings, such as preventive maintenance, mechanical system operations and repair, fire protection systems, etc. The attached QASP template includes most of these common items to be inspected and shall be enhanced by Specification Author to include standards and survey methods that meet each specific location.]]]*

### Introduction

This Quality Assurance Surveillance Plan (QASP) is designed to provide the General Services Administration (GSA) with an effective surveillance method of monitoring and evaluating the Contractor's performance under a Performance-Based Statement of Work (PBSOW) for operation and maintenance services.

In accordance with Federal Acquisition Regulation (FAR) Part 37.601, performance-based Contracting methods are intended to ensure that the required performance quality levels are achieved and that the total payment is related to the degree that services performed or outcomes achieved meet Contract standards. GSA's role in quality assurance is to ensure that the Contractors are achieving the quality levels established in the operation and maintenance services Contracts and focuses on the Contractors' QCP. GSA periodically validates the execution of the Contractors' quality control programs by reviewing such areas as the Contractors' inspection forms, service request logs, tenant reports, tenant satisfaction surveys, and the timeliness of corrective actions.

### A. PURPOSE OF THE QASP

The QASP is intended to accomplish the following:

- Define the roles and responsibilities of participating Government officials.
- Identify the performance objectives based upon the PBSOW in accordance with FAR Part 46.401(a) (1).
- Identify the performance quality level standards in accordance with FAR Part 37.601(a) (2).
- Describe the methods of surveillance for GSA to identify quality levels in accordance with FAR Part 46.401(a) (2).

- Establish a method to provide feedback to the Contractor regarding quality and timeliness of the service performance, i.e., copies of inspection forms, copies of tenant reports, data on tenant satisfaction scores; and any other drivers or measures of performance that are required by the CO or designee
- Establish timeframes for communication and performance improvement if needed.
- Establish specified procedures for changes to the Contract price when services are not performed or do not meet Contract requirements in accordance to FAR Part 37.601(a) (3).
- Ensure the Contractor has developed and implemented a QCP establishing procedures and responsibilities for controlling the quality of work performed.

#### **B. ROLES AND RESPONSIBILITIES OF GOVERNMENT OFFICIALS**

The following Government officials will participate in assessing the quality of the Contractor's performance. Their roles and responsibilities are described as follows:

1. *[[[Insert name]]]* or person designated by the CO will serve as the designee or COR. The COR is responsible for monitoring, assessing, recording, and reporting on the performance of the Contractor. The CO or their designee shall have the primary responsibility for completing forms that will be used to evaluate the Contractor's performance. In addition, the COR or designee shall use the Contractor Performance System (CPS) to document the Contractor's performance.
2. *[[[Insert name]]]* or person designated as the CO will have overall responsibility for overseeing the Contractor's performance. The CO shall be responsible for monitoring the Contractor's performance in the areas of Contract compliance and Contract administration. The CO will review the COR or designee's written inspections and assessments of the Contractor's performance and resolve any discrepancies that may arise between the Contractor and COR or their designee. In addition, the CO shall use the Contractor Performance System (CPS) to document the Contractor's performance.

#### **C. TYPES OF WORK TO BE PERFORMED**

1. The Contractor's performance in providing the following operation and maintenance services shall be evaluated by the Government:

*[[[Edit list as necessary.]]]*

- a. Existing deficiency list
- b. Building operating plan
- c. Equipment inventory
- d. Monthly progress reports
- e. Reference library

- f. Building management support services
- g. Operational requirements
- h. Service requests
- i. Tours
- j. Maintenance program
- k. Water treatment
- l. Oil analysis
- m. Lamp and ballast replacements
- n. Repairs
- o. Safety and environmental
- p. Fire Protection and Life Safety equipment and systems
- q. Other services as described in Section C

#### **D. METHODS OF SURVEILLANCE**

The method of surveillance is based on the performance criteria of the Contract terms and specifications. Each requirement will describe the tasks to be performed and the standard for successful performance. GSA intends to monitor and evaluate the Contractor's performance based on any or all of the following surveillance methods:

1. **Periodic Surveillance Inspections:** This method consists of selected surveillance tasks by the Government that do not require 100 percent inspection, or are performed on a random basis. The CO or their designee will evaluate the Contractor's reports, surveys, etc. on a weekly, biweekly, monthly, or quarterly basis.
2. **Tenant Interviews:** All tenant concerns received through the CO or their designee will be documented and evaluated on a planned schedule developed by the CO or designee. This method may help the CO or their designee focus on areas that may require further action from the CO.
3. **Service Request Documentation:** This method of surveillance will provide information to the CO or designee, such as identification of the types of service requests received the frequencies of service requests, corrective action taken, timeliness of completion, and any other pertinent data. At a minimum, this method shall be performed on a monthly basis.
4. **Tenant Satisfaction Surveys:** The Gallup Organization conducts surveys for one-third of GSA's tenants in Government-owned and leased buildings. These surveys gather important data in many areas, including specific categories pertaining to the operation and maintenance of GSA's buildings. The surveys provide the CO or their designee with satisfaction scores that can be further evaluated to determine if there are any weaknesses within the various programs. There are various measures that can be taken, such as reviewing the survey's comments, obtaining further feedback from the tenants, or sharing the scores with the Contractor to establish a plan of action.

#### **E. QUALITY ASSURANCE FORMS AND REPORTS**

Inspection Form: Inspection Form: The GSA-3423 form will be used to document and evaluate the Contractor's performance. The COR will evaluate each event in accordance with the performance standards and performance requirements stated in the PBSOW. All tasks that are considered to have

unacceptable performance shall be substantiated and documented on the GSA-3423 form. The form will be completed and submitted to the Contractor within 24 hours. The Contractor shall return the GSA-3423 form identifying the corrective action taken within time allotted by the COR.

Inspection of Services Clause: The CO shall fill in applicable commercial or non-commercial clause as appropriate, i.e., FAR Part 52.246.4 paragraphs (e) and (f).

***F. ANALYSIS OF SURVEILLANCE RESULTS (Optional - Region, choose or delete)***

Monthly CO Report: At the end of each month the COR will summarize the overall results of the Contractor's performance for the previous month and send to the CO. If appropriate, the CO may investigate the event(s) further to determine if all the facts and circumstances surrounding the event(s) are accurate. The CO may discuss with the Contractor an event or trend that indicates unacceptable performance.

**QASP STANDARDS**

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
<u>SECTION C</u>  Existing Deficiency Inspection/List and equipment inventory.	A thorough and systematic initial inspection and inventory of all equipment and systems and the performance of an annual inventory to verify and update the inventory.	A complete and accurate deficiency list and inventory must be completed and submitted within the initial timeframe and an annual inventory must be scheduled and conducted to verify and update inventory.	The Government will evaluate performance based on tenant satisfaction, surveys, tenant interviews, periodic inspections, and service request documentation.
Startup Phase.	The Contractor must provide all start up services necessary to provide seamless operation of all building systems. Adjustment to controls, BAS	Submission and review of all required building documentation without failures in providing service to our customers.	
Staffing and ability to communicate with CO.	Contractor must staff and provide communication methods to ensure services are adequately provided to the tenant.	Quality and quantity of staffing and methods of communication ensure adequate response to all Contract requirements.	



<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
Onsite records.	All records required by the Contract must be accurate and available for inspection.	Records must be organized, up to date, and reflect actual conditions.	
CMMS (if applicable).	Service request record keeping using the computerized maintenance management system (CMMS).	Maintenance records are accurate and current and are properly populated within the CMMS to document historical maintenance efforts during the life cycle of the facility.	
Building Operating Plan (BOP).	BOP must detail all aspects of the Contractor's performance of the Contract and building equipment and system information. Energy consumption must be monitored by the Contractor for indicators of inefficient operation.	BOP must be submitted and address all items	
Monthly Progress Reports.	Reports of Contractor progress and activities must be provided monthly.	All reports must be thorough, accurate and submitted on time as required by the Contract.	
Reference library.	Information in the form of a reference library must be provided by the Contractor.	All required documents are to be included in the reference library and must be complete and up to date.	
Service Requests.	Service requests must be received, tracked, and responded to in accordance with Contract requirements.	All routine, emergency, and urgent service requests are responded to as required by the Contract and repairs are completed within specified timeframes.	
Energy and Water Efficiency Plan	Reports must contain monthly energy usage compared to last year and recommendations on improvement	Control systems must be operated to provide maximum efficiency as measured by energy consumption per gross sq. ft. while providing tenant comfort	
Tours.	Tours must be conducted and	All tours must be conducted and documented as required	

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
	documented in accordance with Contract requirements.	and will reflect actual conditions. Adjustments will be made as needed. Logs and check sheets must be adequate to track operating hours and equipment performance history.	
Leak testing.	Refrigerants and natural gas leaks must be avoided and detected as early as possible.	Leak testing for refrigerants and natural gas must be performed and documented in accordance with the BOP.	
Condensate pans	Condensate pans must be clear and algae free at all times.	On at least a monthly basis, tours must include inspection and treatment of condensate pans with appropriate biocide to ensure proper drainage.	
Disruptive or hazardous tool use, disruption to utilities, lighting and space conditioning.	Tenants must not be unnecessarily disrupted during repairs or procedures.	All disruptive tool use during normal working hours must be approved by the CO or their designee and welding and burning must be approved via GSA Form 1755. The CO must approve in advance any work that will disrupt lighting, utilities, and space conditioning.	
Plumbing and restroom maintenance.	Plumbing and drain systems must be maintained and in good working order.	All drain systems must be clear and kept functional at all times.	
Maintenance program.	Equipment must be maintained to the minimum standard established in the Contract and developed by the Contractor.	Minimally, the Contractor must perform preventive maintenance in accordance with the manufacturer's recommended standards for all equipment requiring a preventive maintenance procedure. The Contractor must be required to use the specified NFPA Codes and	
<u>SECTION C</u> <u>Cont</u>			

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
Water treatment.	The Contractor must provide for an effective water treatment program including equipment, monitoring, reporting, etc.	Standards in this document to perform inspections, testing, and preventive maintenance of fire protection and life safety systems and equipment. In addition, the Contractor shall be required to follow the specific testing and inspection frequencies and methods specified in such NFPA Codes and Standards. The Contractor must record such inspection, testing, and services on the appropriate NFPA inspection form.  The Contractor must perform water treatment, monitoring, and testing in accordance with the Contract requirements.	
Oil analysis and oil changes.	Oil analysis and oil changes must be documented.	The Contractor must perform initial and periodic oil analysis and oil changes in accordance with the Contract provisions.	
Lamp and ballast replacements.	Quality, energy-efficient replacement lamps and ballasts must be used by the Contractor.	The Contractor must perform lamp and ballast replacements in accordance with the Contract provisions	
Architectural and structural systems maintenance.	Interior and exterior building architectural and structural systems must be maintained in good repair.	The Contractor must conduct inspections, repairs, replacements, and touch up painting and patching to match existing finishes as required by Contract provisions.	
Interior signage and directories.	Signage must be up to date and in good repair.	Signage must be updated and repaired as required.	

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
<u>SECTION C Cont.</u>			
Finishes maintenance.	All finishes must appear neat and have an esthetically appealing appearance.	The Contractor must maintain and touch up building finishes in a professional manner.	
Repairs.  Safety and environmental management.	All repairs must be performed in a timely professional manner, using quality parts and materials.  Scheduling and record keeping.	The Contractor must perform repairs in accordance with the provisions of the Contract including timeliness of response, invoicing, thresholds, replacement part quality standards, and warranty provisions.  All required safety and environmental tests, certifications, permits and other procedures required in this document must be scheduled in the CMMS work order system, and documented in the CMMS. In addition, the Contractor must maintain copies of all such tests, certifications, permits and other required records.	
	Refrigerant control and certification.	The Contractor must control refrigerants and maintain records in accordance with EPA, GSA, and appropriate Air Quality Management District standards. The Contractor must take immediate action to contain refrigerant leaks and must report any leaks to the CO or designee.	
	AQMD operating permits.	The Contractor must be familiar with the requirements of the Local Air Quality Management District (AQMD), and shall be responsible for obtaining operating permits for boilers, generators, and other	

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
		emissions-producing equipment regulated by the district.	
<u>SECTION C</u> <u>Cont.</u>	Underground storage tanks.	The Contractor is responsible for complying with all Federal, State, and Local requirements for the periodic inspection, monitoring, permitting, certification and maintenance of underground storage tanks.	
	Polychlorinated biphenyls (PCBs) control.	The Contractor must inspect all transformers containing (PCBs) and maintain records of such inspections in accordance with State, Local, and Environmental Protection Agency (EPA) regulations.	
	Hazardous waste.	The Contractor must be cognizant of, and comply with, all Federal, State, and Local laws and regulations related to the disposal (landfill, sewer discharge, etc.) of hazardous waste and materials used or removed in the performance of the Contract or discharged by the building, and must comply with all such requirements, to include record keeping requirements.	
	Electrical safety.	The Contractor must comply with NFPA 70E when working on or around electrical equipment or systems. The Contractor must ensure that areas restricted to qualified personnel are secured and properly labeled.	
	Lock out/tag out.	The Contractor must develop a lockout/tag out program in accordance with 29 CFR 1910. The program must include all anticipated energy sources, including but not limited to electricity, steam,	

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
		pressurized fluids, and mechanical energy.	
<u>SECTION C</u> <u>Cont.</u>	Confined spaces.	The Contractor must identify and label all confined spaces in accordance with OSHA requirements. The Contractor must develop a confined space entry permit system for all permit- required confined spaces within 60 calendar days of commencement of the Contract.	
	Asbestos management.	The Contractor shall be expected to occasionally perform Class III and Class IV asbestos work as defined in 29 CFR 1910.26.1101. The Contractor must be prepared to deal with asbestos on a small scale, short duration basis to effect emergency repairs and to clean up small spills. The Contractor must protect building tenants, visitors, and employees from asbestos exposure. The Contractor must comply with applicable National Institute of Building Sciences (NIBS) and OSHA standards.	
	Hazardous materials.	The Contractor must make material safety data sheets (SDSs) available to their employees in accordance with 29 CFR 1910.1200.	
	Key Sustainable Product (KSP) Standards	The Contractor shall provide the required data submittals (See Section J, Exhibit 19) to the CO or their designee prior to the start of each contract year.	
	Boiler/pressure vessel operation and inspection standards.	All tests must be done in accordance with ASME Boiler and Pressure vessel Code, National Board Inspection Code (NBIC), EPA Local AQMD requirements, ASME	

Performance-Based Task	Services to Be Inspected	Standard for Successful Performance	Quality Assurance Surveillance Method
		CSD-1, and NFPA 85.	
	Backflow prevention devices.	Backflow prevention devices used on water- based fire suppression systems must be inspected, tested and maintained according to NFPA 25.	
<u>SECTION C</u> <u>Cont.</u>	Potable water systems.	The Contractor must comply with the Safe Drinking Water Act, PL 99-339, as amended, and the EPA Safe Drinking Water regulations (40 CFR 141.43, Sections A and D), that address the quantity of lead allowable in new installations or repairs to existing drinking water systems and/or plumbing. Potable water systems which are repaired, modified, serviced, or breeched in any way must be disinfected and flushed prior to returning the system to service.	
	Labeling.	The Contractor must label equipment, storage areas and workspaces in accordance with OSHA standards immediately after commencement of the Contract if such labels are not already in place.	
Fire Protection and Life Safety Equipment and Systems.  <u>SECTION C</u> <u>Cont.</u>	Fire alarm system.	The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, and testing methods outlined in NFPA 72. Documentation of the above mentioned inspection, maintenance, and testing results must be recorded on the applicable Inspection and Testing Form from NFPA 72.  Fire alarm system testing, maintenance and repair shall be performed during normal	

Performance-Based Task	Services to Be Inspected	Standard for Successful Performance	Quality Assurance Surveillance Method
<p><u>SECTION C</u> <u>Cont.</u></p>		<p>business hours when it does not interfere with building operations. When such testing, maintenance or repair will interfere with building operations; it shall be performed after normal business hours without additional costs to the government, unless approved otherwise by the CO or designee</p> <p>The Contractor must provide a fire watch in areas left unprotected until the fire alarm system is completely restored to service. In no case shall the fire alarm systems be left in a disabled condition without notifying the CO or designee.</p> <p>The Contractor must ensure that the fire alarm system is maintained operable at all times except while being tested or repaired. It is essential that the Contractor carefully schedule with the building manager all non emergency shutdowns of the fire alarm system and that back up protection be provided by the Contractor (arrangement of additional personnel stationed at the fire alarm system control panel) any time the fire alarm system is out of service for more than 4 hours. In addition, regardless of the duration of the shutdown, the affected portion of the system must be tested to ensure that the protection has been restored.</p> <p>In addition, during any period in which there is no capability for the fire alarm system to transmit fire alarm signals to a supervising station, the</p>	



Performance-Based Task	Services to Be Inspected	Standard for Successful Performance	Quality Assurance Surveillance Method
<p><u>SECTION C</u> <u>Cont.</u></p>		<p>Contractor must maintain a fire watch in accordance with GSA guidelines.</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p>	
	<p>Water-based fire suppression system</p>	<p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies and testing methods outlined in NFPA 25.</p> <p>Water-based fire suppression system testing, maintenance and repair shall be performed during normal business hours when it does not interfere with building operations. When such testing, maintenance or repair will interfere with building operations; it shall be performed after normal business hours without additional costs to the</p>	

Performance-Based Task	Services to Be Inspected	Standard for Successful Performance	Quality Assurance Surveillance Method
<p><u>SECTION C</u> <u>Cont.</u></p>		<p>government, unless approved otherwise by the CO or designee.</p> <p>The Contractor must provide a fire watch in areas left unprotected until the water-based fire suppression system is completely restored to service. In no case must any water based fire suppression system be left in a disabled condition without notifying the CO or designee.</p> <p>The Contractor must ensure that the sprinkler system is maintained and operable at all times except while being tested or repaired. It is essential that the Contractor carefully schedule with the building manager and CO or their designee all non emergency shutdowns of the sprinkler system and that back up protection be provided by the Contractor any time the sprinkler system is out of service for more than 4 hours. In addition, regardless of the duration of the shutdown, the affected portion of the system must be tested to ensure that the protection has been restored.</p>	
		<p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p>	

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
<u>SECTION C</u> <u>Cont.</u>	Fire Rated doors and assemblies.	<p>The Contractor must perform inspections, tests and maintenance or repairs in accordance with the current edition of NFPA 80 and NFPA 101.</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 80 and NFPA 101.</p>	
<u>SECTION C</u> <u>Cont.</u>	Fire Damper and combination fire/smoke dampers.	<p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p> <p>The Contractor must perform inspections, tests, and maintenance or repairs in accordance with the current edition of NFPA 80. Maintenance of combination fire/smoke dampers must also meet the requirements contained in NFPA 105.</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 80.</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p>	

Performance-Based Task	Services to Be Inspected	Standard for Successful Performance	Quality Assurance Surveillance Method
	Smoke door assemblies.	<p>The Contractor must perform inspections, tests, and maintenance or repairs in accordance with the current edition of NFPA 105.</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 105.</p>	
SECTION C <u>Cont.</u>	Smoke dampers.	<p>The Contractor must perform inspections, tests and maintenance or repairs in accordance with the current edition of NFPA 105.</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 105.</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p> <p>The Contractor must perform inspections, tests, and</p>	

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
		<p>maintenance or repairs in accordance with the current edition of NFPA 10.</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 10.</p>	
<u>SECTION C</u> <u>Cont.</u>	Non-water based fire extinguishing systems.	<p>The Contractor must perform inspections, tests and maintenance in accordance with the current edition of the applicable NFPA standards (e.g., NFPA 12, 12A, 17, 17A, 96, 2001, etc.).</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in the applicable NFPA standards (e.g., NFPA 12, 12A, 17, 17A, 96, 2001, etc.).</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p>	
<u>SECTION C</u> <u>Cont.</u>	Smoke control systems.	The Contractor must perform inspections, tests, and maintenance or repairs in	<u>SECTION C</u> <u>Cont.</u>

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
		<p>accordance with the current edition of NFPA 92.</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods.</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p>	
<u>SECTION C</u> <u>Cont</u>	Emergency and Standby Power Systems	<p>The Contractor must perform inspections, tests, and maintenance or repairs in accordance with the current edition of NFPA 110 and NFPA 111</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p>	
	Emergency lighting systems and exit signage.	<p>The Contractor must perform inspections, tests, and maintenance or repairs in accordance with the current edition of NFPA 101.</p> <p>The Contractor must utilize qualified personnel meeting the applicable requirements in Section H15.3, Qualification of Technicians. in performing any task associated with this contract</p> <p>The Contractor is responsible for meeting the inspection, maintenance, testing</p>	

<b>Performance-Based Task</b>	<b>Services to Be Inspected</b>	<b>Standard for Successful Performance</b>	<b>Quality Assurance Surveillance Method</b>
		frequencies, testing methods, and documentation requirements outlined in NFPA 101.	
Vertical transportation system maintenance.	<i>[[[Complete only if included in this scope.]]]</i>	<i>[[[Complete only if included in this scope.]]]</i>	
Miscellaneous work.	The Contractor must provide labor hours and parts and supplies as requested by the CO or designee.	The Contractor must provide labor hours as requested by the CO to perform tasks in a timely manner.	
Section H	Green Purchasing Tracking	Shall track and report and amounts of green cleaning products and materials purchased. Furnish records upon request	
	Recycle Content Product Purchase Annual Reporting	Annual report on recycle products if applicable	

### ***J.1. Contract Deliverables Reference***

<b>DELIVERABLE</b>	<b>REFERENCE</b>	<b>DELIVERABLE DUE</b>	<b>POINT OF CONTACT</b>
Existing deficiency inspection/initial deficiency list	C.4	Report due not later than ___ days <i>[[[INSERT TIMEFRAME]]]</i> after award of the Contract.	CO or designee.
Startup/Transition phase including staffing plan Complete CMMS training	C.5.1	Within ___ days <i>[[[INSERT TIMEFRAME]]]</i> of the startup phase.	CO or designee.
Phase out transition.	C.6	On the last performance day of the Contract, Contractor must turn over keys and identification badges or cards.	CO or designee.
List of key personnel and emergency contact information, which may include subcontractor contacts as applicable.	C.8.1	The Contractor must develop and submit to the CO within ___ days <i>[[[INSERT TIMEFRAME]]]</i> of award.	CO or designee.
CMMS Complete CMMS audit	C.8.5	<p style="text-align: center;"><b>Option A</b></p> <p>The Contractor shall use the Government-furnished CMMS, to include validating and updating the equipment inventory database, including all data fields specified by the CO or designee. Complete yearly CMMS audit</p> <p style="text-align: center;"><b>Option B</b></p> <p>The Contractor shall provide all hardware and software to support and maintain an automated database of building maintenance and repair activities using a CMMS</p>	CO or designee
Quality control program.	C.8.6	Develop and submit for approval ___ days <i>[[[INSERT TIMEFRAME]]]</i> prior to the start of the Contract.	CO or their designee
Building operating plan.	C.9.1	Develop and submit for approval, not later than the end of the startup phase.	CO or designee.
Radon mitigation	C.9.2.J.18	Program must be	CO or designee.



<b>DELIVERABLE</b>	<b>REFERENCE</b>	<b>DELIVERABLE DUE</b>	<b>POINT OF CONTACT</b>
program.		described in the building operating plan.	
Equipment inventory update.	C.10	The Contractor must update and verify the equipment inventory on an annual basis.	CO or designee.
Monthly progress reports.	C.11	On a monthly basis, not later than the fifth working day of the subsequent month.	CO or designee.
Equipment condition assessment.	C.13	On an ongoing basis during the performance of the Contract as requested.	CO or designee.
Review of design documents.	C.16	Review as requested.	CO or designee.
Building management support services.	C.17	Assist as requested.	CO or designee.
Energy and Water Efficiency Report	C.21.6	Monthly/Annually	CO or designee.
Emergency service request and callback repair plan report.	C.23.2	Written accounting of any emergency callback the morning of the next working day.	CO or designee.
Routine service request - response extension request.	C.23.5	Contractor must immediately notify with a written extension request.	CO or designee.
Preventative maintenance system.	C.35.1	Within ____ days <b>[[[INSERT TIMEFRAME]]]</b> prior to start.	CO or designee
Initial report and development of water treatment program.	C.36.3	Within the first month of the Contract.	CO or designee.
Monthly water treatment testing or makeup water chemical tracking.	C.36.6	Monthly within the monthly progress report.	CO or designee.
Periodic oil analysis.	C.37.1	At least annually, with results submitted within the next monthly progress report.	CO or designee.
Repairs using subcontractors.	C.40.1	Must provide justification for subcontract need in advance.	CO or designee.
Reimbursable repairs completion date.	C.40.3	Mutually agreed upon by the CO or their designee and the Contractor.	CO or designee.
Lamps and ballasts containing mercury record.	C.38	Document monthly all purchases of mercury-containing lamps within	CO or designee.

<b>DELIVERABLE</b>	<b>REFERENCE</b>	<b>DELIVERABLE DUE</b>	<b>POINT OF CONTACT</b>
		the monthly progress report.	
Electrical safety	C.41.10	Deficiencies must be reported within 30 days after Contract award.	CO or designee.
Fire alarm system: If the Contractor must disturb materials he suspects may contain lead-based paint.	C.42.1	The Contractor must immediately report the condition to the CO or designee.	CO or designee.
Warranties not honored by manufacturer.	C.40.10	Contractor must immediately notify CO or their designee if an installer or manufacturer fails to comply with the terms of a warranty.	CO or designee.
Scheduling and recordkeeping of permits, personnel safety, control of hazardous substances, certifications, and records	C.41.2	Furnish copies as requested.	CO or designee.
Refrigerant control and certification log.	C.41.3	Refrigerant control logs must be updated and inspected as required.	CO or designee.
AQMD operating permits.	C.41.4	Copies made available immediately upon request.	CO or designee.
Polychlorinated biphenyl (PCB) control transformer leaks.	C.41.7	Immediate notification.	CO or designee.
Workplace safety plan.	C.41.9	A safety and health plan must be submitted for review and approval within 30 days after award.	CO or designee.
Confined space entry permit system.	C.41.14	The Contractor must develop a confined space entry permit system for all permit-required confined spaces within 60 calendar days of the Contract start.	CO or designee.
Fire alarm system: If the Contractor must disturb materials he suspects may contain ACM.	C.41.15	The Contractor must immediately report the condition to the CO or designee.	CO or designee.
Hazardous materials: material safety data sheets – hazardous materials inventory.	C41.16	SDSs must be made available on request. The Contractor must prepare and submit hazardous materials	CO or designee.

DELIVERABLE	REFERENCE	DELIVERABLE DUE	POINT OF CONTACT
		inventory as an appendix to the building operating plan. This must be updated and resubmitted annually by September 30 of each year.	
Key Sustainable Product (KSP) Standards	C.41.16.4	Annually	CO or designee.
Boiler Inspections and Tests	C.41.17.2	Boiler must be inspected annually and forms 349, 350 & 1034 completed as required	CO or designee
Backflow prevention devices – annual inspection certificate.	C.41.17.3	Annually.	CO or designee.
Labeling and signage.	C.41.18	Labeling per OSHA standards within ____ business days [[[INSERT TIMEFRAME]]] after start of Contract.	CO or designee.
Fire protection systems on line at all times unless approval is given during maintenance periods.	C42.1	Advance notification and approval per occurrence.	CO or designee.
Fire alarm system: If the Contractor encounters equipment that is in a condition that may endanger life or property.	C.42.2	The Contractor must immediately notify the CO or their designee of the condition requiring immediate action. Within 24 hours the Contractor must provide a written report to the COR of the hazardous condition and recommended corrective action.	CO or designee.
Fire alarm system: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies and testing methods outlined in NFPA 72.	C.42.2	Throughout the year. Documentation of the subject inspection, maintenance and testing results must be recorded on the applicable Inspection and Testing Form from NFPA 72.	CO or designee.
Water-based fire suppression systems: If the Contractor encounters equipment that is in a condition that may endanger life or	C.42.3	The Contractor must immediately notify the COR of the condition requiring immediate action. Within 24 hours that Contractor must	CO or designee.

<b>DELIVERABLE</b>	<b>REFERENCE</b>	<b>DELIVERABLE DUE</b>	<b>POINT OF CONTACT</b>
property.		provide a written report to the CO or their designee of the hazardous condition and recommended corrective action.	
Water-based fire suppression systems: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, and testing methods outlined in NFPA 25.	C.42.3	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded on the applicable "suggested form," as found in the current edition of NFPA 25.	CO or designee.
Fire-rated door assemblies: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 80. Inspection of fire-rated door assemblies shall also meet the requirements in NFPA 101.	C.42.4	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of NFPA 80 and NFPA 101.	CO or designee.
Fire damper and combination fire/smoke dampers: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 80 and NFPA 105.	C.42.5	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of NFPA 80 and NFPA 105.	CO or designee.
Smoke doors and assemblies: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 105.	C. 42.6	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of NFPA 105.	CO or designee

<b>DELIVERABLE</b>	<b>REFERENCE</b>	<b>DELIVERABLE DUE</b>	<b>POINT OF CONTACT</b>
Smoke dampers: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 105.	C.42.7	Throughout the year. Documentation of the subject inspection, maintenance and testing results must be recorded in accordance with the requirements of NFPA 105.	CO or designee.
Portable fire extinguishers: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 10.	C42.8	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of NFPA 10.	CO or designee.
Non-water-based fire extinguishing systems: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in the applicable NFPA standard.	C.42.9	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of the applicable NFPA standard.	CO or designee.
Smoke control systems: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 92A.	C. 42.10	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of NFPA 92A.	CO or designee.
Emergency and standby power systems: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 110 and NFPA 111.	C.42.11	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of NFPA 110 and NFPA 111.	CO or designee.

<b>DELIVERABLE</b>	<b>REFERENCE</b>	<b>DELIVERABLE DUE</b>	<b>POINT OF CONTACT</b>
Emergency lighting systems and exit signage: The Contractor is responsible for meeting the inspection, maintenance, testing frequencies, testing methods, and documentation requirements outlined in NFPA 101.	C.42.12	Throughout the year. Documentation of the subject inspection, maintenance, and testing results must be recorded in accordance with the requirements of NFPA 101.	CO or designee.
Qualification of employees (May 1989) paperwork.	H.1.3	As requested.	CO or designee.
The collection and submission of GSA Form 139, Recording Presence.	H.7	Submit within ____ calendar days of each week's end <i>[[[INSERT TIMEFRAME]]]</i> .	CO or designee.
Asbestos awareness training certification.	H.13	Training within 60 calendar days after start. Certify completion within 5 days of training.	CO or designee.
Submission of resumes for new employees.	H.15.4	The Contractor must submit resumes for all personnel prior to personnel beginning work.	CO or designee.
State licensing – if required.	H.15.5	Within 90 calendar days of beginning employment.	CO or designee.
Price proposal for additional services work.	H.18.2	Within 48 hours of the request.	CO or designee
Strike contingency plan (SCP) submission.	H.20	SCP must be submitted 5 calendar days prior to Contract start date and updated annually.	CO or designee.

## EXHIBIT 2

### J.2. Green Purchasing Report

*[[[Note: This list is not all inclusive, the Contractor shall expand the list as appropriate to reflect non bio-based items purchased and used under this Contract]]]*

Non Bio-based Purchase Reports						
Report Period Covered:	Date Report Prepared:					
Building:						
Contract Number:						
Contractor:						
	Attributes and Cost					
	CPG	DfE	Green Seal	Env Choice	Not Green	EcoLogo
Hand cleaners and sanitizers						
Mulch and Compost						
Odor Control / Neutralizer						
Mobile equipment hydraulic oil			\$400.00 (sample entry)			
Stationary equipment hydraulic oil						
Diesel fuel additives				\$200.00 (sample entry)		
2-cycle engine oil						
Penetrating lubricants						
Greases					\$100.00 (sample entry)	
Sorbents						
Adhesives and mastics						
Towels						
General purpose de-icer						
Wood and concrete sealers	\$3,500					

	(Sample Entry)					
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Resources Guide: Green Seal <http://www.greenseal.org/FindGreenSealProductsAndServices.aspx>

Design for the Environment (DfE) <http://www.epa.gov/dfe/>

EPA-CPG <http://www.epa.gov/epawaste/conserve/tools/cpg/index.htm>

SFtool [Green Procurement - Cleaning Products - GSA Sustainable Facilities Tool](http://www.gsa.gov/epawaste/conserve/tools/cpg/index.htm) [sftool.gov](http://sftool.gov)

# Green Purchase Report

***[[[NOTE TO SPEC WRITER: THE CONTRACTOR SHALL SUBMIT A REPORT OF BIO-BASED ITEMS PURCHASED AND USED UNDER THIS CONTRACT]]]***

## Annual Contractor Reporting of Designated Biobased Purchases

Annual Contractor Reporting of Designated Bio-based Purchases

Section 9002 of the 'Farm Security and Rural Investment Act of 2002,' as amended by the 'Food, Conservation, and Energy Act of 2008, Pub. L. 110-246 (the Farm Bill)' requires Federal agencies to give a procurement preference to USDA-designated bio-based products and requires agency Contractors to report such purchases under service and construction contracts. The Federal Acquisition Regulation (FAR) Council subsequently published a bio-based final rule at 77 FR 23365, implementing the reporting requirement in FAR 52.223-2, 'Affirmative Procurement of Bio-based Products Under Service and Construction Contracts' with an effective date of May 18, 2012. To facilitate collection of report data, the FAR is amended based on final rule 78 FR 46794, which requires contractors to submit their biobased reports to <https://www.sam.gov/>.

To comply with the reporting provisions of the Act, the Contractor shall file an annual report on purchases of designated bio-based products used under the performance of this contract.

Where To Submit:

CY 2013 No later than October 31<sup>st</sup> in accordance with final rule 78 FR 46794 'Update to Biobased Reporting Requirement' the Contractor is responsible for submitting their annual biobased report using the following web site <https://www.sam.gov/>.



Note: The US Department of Agriculture (USDA) bio-based products web site  
<http://www.biopREFERRED.gov/ProductCategories.aspx>.

Note: US Department of Agriculture (USDA) Bio- based products  
<http://www.biopREFERRED.gov/ProductCategories.aspx>

# EXHIBIT 3

## J.3 Solid Waste Audits

*[[[If this function is performed under a separate Contract, delete.]]]*

This exhibit is provided as a guide for additional considerations for post-audit monitoring, plan implementation, training and other ancillary activities that may assist GSA in meeting the listed objectives.

### I. Background

GSA's Public Buildings Service (PBS) provides work environments for over one million Federal employees nationwide. The inventory consists of courthouses, laboratories, offices and border stations. Tenant activities in these buildings generate tons of solid waste/trash that PBS is obligated to properly dispose of and achieve a minimum waste diversion of 50%. Recycling composting and other alternatives to landfills and incineration are the preferred methods for disposal of solid waste/trash.

### II. Objectives

- A. Determine the most efficient methods to maximize reduction, recycling, and composting of solid waste/trash and to minimize waste shipments.
- B. Achieve a minimum of 50% waste diversion through waste minimization, recycling, and composting.
- C. Determine the right service level for solid waste/trash collection and removal

### III. Extent of Work

- A. Contractor shall conduct a solid waste/trash audit to include:
  - 100% of the waste and/or recycling collected in a 24 hour period must be audited (excluding durable goods or construction waste).
  - The audit must represent a 24 hour period on a typical work day.
  - Use scales to weigh sorted waste, as weight is the preferred metric.
  - Determine the amount of recyclable materials being thrown away that could have been recycled and composted. At a minimum, the recyclable items within the waste/trash must be identified and separated into the following categories: Paper, Plastic, Cardboard, Glass, Metal/aluminum, and Wet Waste.
- B. Contractor will develop a written report and analysis of the conclusions drawn from this audit, including recommendations for improving the economy and efficiency of waste collection, storage, transfer, and disposal (including recycling and composting). This report shall address, at a minimum:
  - Recommendations to maximize waste minimization, recycling, and composting to achieve at least 50% waste diversion.

- Recommendations to right-size service level for solid waste/trash removal services to minimize trash shipments.

## EXHIBIT 4

### J.4.GSA Mandatory KSPs\* and Environmental Sustainable Products

			Recycle Content & CPG	Ecologo	DfE	Biobased	Green Seal
Product Use	Preferable Contents	Contents to Avoid					
*Acoustical Ceiling Tile							
Adhesive - Aerosol	Rubber-based; low-VOC	SARA 313 chemicals (cyclohexane, hexane, methylene chloride); petroleum distillates; CFCs	ü			X	
Adhesive - Epoxy	Non-toxic; low-VOC	Isopropyl alcohol; SARA 313 chemicals (toluene)	ü			X	
Adhesive Remover	Soy-based mixture; citrus extract; low-VOC	Aerosol; petroleum distillates	ü			ü	
Coil Cleaner	Non-acid cleaners with non-toxic, biobased contents; low-VOC; if acid must be used acetic or phosphoric acid are preferable	Sulfuric acid, hydrofluoric acid, or similar caustic chemicals. SARA 313 chemicals (trichloroethylene)	ü			ü	
*Concrete Ready Mix	Water-based, latex-based, or biobased sealers; low-VOC	Acrylonitrile; SARA 313 chemicals (n-methyl-2-pyrrolidone)	ü			ü	
Wood Sealer	Water-based, latex-based, or biobased sealers; low-VOC	Acrylonitrile; SARA 313 chemicals (n-methyl-2-pyrrolidone)					
Degreaser	Water or biobased (soy) degreasers; non-toxic; non-aerosol; low-VOC	Aerosol; petroleum distillates	ü			ü	
Deicer (Road and Windshield)	Biodegradable windshield deicer; salt-free ice melt; magnesium chloride or calcium chloride; calcium magnesium or magnesium acetate	SARA 313 chemicals (methanol, isopropyl alcohol, ethylene glycol); aerosol; sodium chloride	ü			ü	
Descaler	Enzyme-based descaler; urea; trisodium phosphate; low-VOC	Hydrochloric (muriatic) acid or similar caustic compounds (oxalic or hydrofluoric acid); sodium hypochlorite	ü			ü	
Fuel Additive	Biobased; non-toxic	Petroleum distillates	ü			ü	
Graffiti Remover	Biobased content (soy/corn); low-VOC	SARA 313 chemicals (toluene, xylene); acetone; isopropyl alcohol	ü			ü*	
Grease / Lubricant	Biodegradable/biobased content (soy or vegetable oil); non-toxic; re-refined lubricating oils; low-VOC	Petroleum or mineral-based oils; metallic soaps or polyurea derivatives; sulfur, chlorine, zinc; amine phosphate or other irritants	ü			ü	
*Gypsum Board							

Light Bulbs	Energy Star or FEMP fluorescent bulbs or tubes; reduced mercury content	Mercury	N/A			N/A	
*Nylon Carpet							
Mastic	Water or acrylic-based; non-toxic; low-VOC	Petroleum-distillates (mineral spirits)	ü			X	
*Interior Paint	Remanufactured or recycled paint; water-based or latex-based; low-VOC	Aerosol; oil-based (alkyd) paints (mineral spirits, aliphatic hydrocarbons); SARA 313 chemicals (toluene, xylene, ethyl benzene); acetone	ü			X	
Paint Remover	Biobased; non-toxic; low-VOC	SARA 313 chemicals (n-methyl-2-pyrrolidone, methanol, methylene chloride); isopropyl alcohol	ü			ü*	
Spray Foam	CFC-free; biobased (soy); low-VOC	HCFCs; SARA 313 chemicals (formaldehyde)	X			ü	*

ü Product available and offered through GSA Advantage

ü\* Product available, but not currently offered through GSA Advantage

X Product currently not available

Notes:

a - On the GSA Advantage website some environmental product indicators, such as 'Non-Toxic' and 'Biobased', are specified by the product vendor and have not been independently verified. Prior to procurement, it is important to examine the Material Safety

## EXHIBIT 5

### J.5. Building Information Sheet

[[[This template is provided to assist the Contractor in developing his O&M mechanical cost. Spec writers are encouraged to expand on these items]]]

#### BUILDING INFORMATION SHEET

The following are building statistics for informational purposes only. The CO will complete a Building Information Sheet for every building. The figures below are estimates only. When necessary, the CO or their designee will provide access to assignment drawings and blueprints.

1. BUILDING DATA:

Property Manager Contact information:

Contract Specialist Contact Information:

O&M Contractor contact information

Name and building number: \_\_\_\_\_

Location: \_\_\_\_\_

Number of floors: \_\_\_\_\_

Number of elevators \_\_\_\_\_

Age of Building: \_\_\_\_\_

Normal Building Operating Hours: \_\_\_\_\_ (Opening and Closing of Building)  
Number of Agencies: \_\_\_\_\_  
List Agencies (Of special note are law enforcement and agencies with 24 hour operations)

2. BUILDING STATISTICS: *[[[Region, delete if not applicable]]]*

INTERIOR: \_\_\_\_\_

SF\*

EXTERIOR: \_\_\_\_\_

SF\*

3. CHILD CARE CENTERS *[[[Region, delete if not applicable]]]*

Interior: special equipment (identify) Yes or No

Playground: Yes or No

5. ENVIRONMENTAL (quantity)

Fuel Tanks (GSA Owned) \_\_\_\_\_

Underground/Above ground \_\_\_\_\_

Generators: (GSA Owned) \_\_\_\_\_

Firing Range \_\_\_\_\_

Asbestos: (location) Yes or No

Lead Based Paint: (location) Yes or No

Copy of all environmental permits (Air, UST, NPDES, etc.)

Copy of plans (SPCC, Pollution Prevention, Asbestos Management, etc.)

NOTE TO CONTRACTOR: Asbestos, Lead, or any other hazardous material may be in the building (particularly older ones) and has not been discovered yet so all suspicious material found should be treated assuming it is.

6. MAJOR ALTERATION PROJECTS *[[[Region, delete if not applicable]]]*

Buildouts/Prospectus/Agencies moving In/Out (possible impact)

7. BUILDING AUTOMATION SYSTEMS and OTHER CRITICAL EQUIPMENT

(Include manufacturer names, model #s, serial #s, tonnage KW, etc) *[[[Region may want to include equipment inventory]]]*

EMS/BAS/SMART Technologies:

Yes or No

CMMS:

CHILLERS:

UPS SYSTEMS:

GENERATORS:

Other important equipment/information:

Water Treatment (coupon racks?)

Roof Anchorage Points and Systems - How many?

Is Electrical Labeling up to date?

8. HISTORICAL REPAIR, SERVICE CALL and TESTING DATA: (per year unless otherwise noted)

Number of Repairs Monthly \_\_\_\_\_

Number of Service Calls Monthly \_\_\_\_\_

of Repairs over threshold for the past 2 year's \_\_\_\_\_

# of total repairs over the last year \_\_\_\_\_

Number and amount

9. Anniversary Dates of the Last Testing of Major Maintenance Items:

Eddy Current

Hydro Testing of Fire extinguishers (if applicable) 3, 5, & 12 year

Bibb Hose and Obstruction Tests 3 & 5 year

Infrared testing

Switchgear  
Boiler  
Elevator

10. HISTORICAL AND AESTHETIC ATTRIBUTES *[[[Region, delete if not applicable]]]*

Care should be taken to protect historical elements and artwork when performing work and maintenance around those items.

Artwork: Yes or No  
Statues: Yes or No  
Artifacts:

11. CAFETERIAS/CONCESSIONS *[[[Region, delete if not applicable]]]*

Yes or No

12. Energy Conservation (add or delete as necessary)  
(All pertinent utilities with regards to possible conservation)

Water usage:  
Gas/Oil:  
Steam:  
Electrical usage:

## EXHIBIT 6

### J.6. Monthly Report Template

*[[[This template is provided for optional use and contains the minimum required reporting elements from the SOW. Regions may add requirements if applicable]]]*



MONTHLY REPORT FOR :	
----------------------	--

<b>TASK ORDER/CONTRACTOR #:</b>	
<b>DATE OF REPORT:</b>	
<b>FOR PERIOD:</b>	

**PREPARED BY**

<b>NAME:</b>	
<b>TITLE:</b>	
<b>CONTRACTOR:</b>	
<b>PHONE NUMBER:</b>	



<b>1. STATUS OF ALL WORKORDERS – Attach copy of CMMS printout if available</b>
<b>2. EQUIPMENT WORKING OFFLINE</b>
<b>3. OPERATING SCHEDULE CHANGES</b>
<b>4. DESCRIPTION OF LOST TIME FOR ACCIDENTS OR OTHER SAFETY PROBLEMS</b>

<b>5. QUALITY CONTROL INSPECTIONS</b>

<b>6. BUILDING SERVICES, UTILITY MISCELLANEOUS HOURS</b>

<b>7. COPIES OF ARRIVAL AND DEPARTURE REPORTS</b>

<b>8. MONTHLY WATER TREATMENT AND OTHER TEST RESULTS</b>

<b>9. RECALIBRATION DOCUMENTATION OF ADVANCED METERS (2 X/yr)</b>
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<b>10. REFRIGERATION CONTROL LOGS</b>
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<b>12. FUEL LEVELS</b>
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## **EXHIBIT 7**

### **J.7. Building Operating Plan Template**

*[[[The Building Operating Plan, Exhibit 7, is a sample of the National Template issued in 2008. There are some items that are above and beyond the contents listed in C.9.2. Because CO was in the process of collecting all of the BOPs it was felt that it would be best to keep using the current template with the understanding that it would be updated in the near future. Make changes where obvious updates are warranted. The BOP is a mandatory requirement and shall contain the minimum requirements (if applicable) in the SOW and additional items may be add by the regions if necessary]]]*

## **BUILDING OPERATING PLAN**

**Insert Building Photo  
(ABP Photo)**

**PREPARED FOR:  
BUILDING NAME  
ADDRESS, CITY & STATE  
BUILDING NUMBER**

**REGION X**

**DATE**

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# 1.0 GENERAL GUIDANCE

This document presents the Building Operating Plan for (Enter bldg name and address City, State Zip Code)

This plan documents the procedures for the operation of all the mechanical and electrical equipment in the Building. Equipment is operated to maximize safety and to maintain comfort conditions. Electric, gas, and water usage is kept to a minimum without compromising either safety or comfort. The systems covered by this Building Operating Plan include:

- 1) Electrical systems and equipment
- 2) Mechanical systems and equipment
- 3) Fire Protection systems and equipment
- 4) Control Systems controlling all systems which themselves are within the scope
- 5) Architectural and Structural systems, fixtures, structures and equipment within the government owned site.
- 6) Vertical Transportation (Elevators / Escalators)

Excluded from this Building Operating System

- 1) Security Systems
- 2) Telecommunication Systems
- 3) Equipment owned and operated by tenant agencies
- 4) Furnishings
- 5) Equipment owned by servicing public utilities

When levels of required services change, when building equipment changes, when operating procedures change, or when Agency requirements change, the plan shall be revised on a timely basis (within 10 working days) and submitted to the CO or designee.

The conservation of energy is not achieved at the expense of maintaining the required environmental or other special conditions described elsewhere in the building operating plan. Energy conservation is achieved through effective operational and maintenance practices as well as appropriate repairs or alterations to existing equipment or systems which reduce the overall cost of service. Energy conservation is achieved through the employment of good engineering and operating practices using accepted methods and procedures.

It is the tenant Agency's responsibility to ensure that lights and equipment are turned off when not needed, that ventilation is not blocked or impeded, and that windows and other building accesses are closed during the heating and cooling seasons. The operation of portable heaters, fans and other such devices in Government controlled space is prohibited unless authorized by the GSA Building Manager.

There are no areas in the building authorized to maintain a level of lighting higher than that specified in the Federal Property Management Regulations or as directed by GSA.

There are no areas in the building authorized to maintain higher room temperatures during the heating season than those authorized by GSA.

Temperature- Heating/Cooling

The Contractor shall adhere to the temperature levels and energy conservation practices identified herein.

During normal working hours, temperature controls shall be set to maintain space temperatures in accordance with the latest guidelines issued by the American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc., (ASHRAE), Thermal Environmental Conditions for Human Occupancy.

During non-working hours heating temperature shall be set no higher than 55 degree Fahrenheit\* and air-conditioning will not be provided except as necessary to return space temperatures to a suitable level during working hours and to assure the protection of the building and its systems.

\*Minimum setback for temperatures and humidity control may vary from the established ASHRAE standards where it is necessary to maintain a specified set point as established by the architect and the Architectural Woodwork Institute (AWI) in order to maintain and protect the finished woodwork throughout the courtrooms and offices. These perimeters will be established and adjusted as necessary by the CO or their designee in order to maintain the building interior finishes.

Temperature levels stipulated by the Government are subject to change based on nationwide energy policies.

There are no night time set-backs for the chilled water, but at night the load is reduced because there is no demand for it. So the demand on the chillers is less.

#### General Contract Information

Service Provider:

Contract #:

Contact:

Base:

Option 1:

Option 2:

The Contractor shall provide all management, supervision, labor, materials, supplies, repair parts, tools, and equipment. They are also responsible to plan, schedule, coordinate and ensure effective and economical completion of all work and services specified in this Contract.

All mechanical specifications are a statement of the minimum level of work and services that are to be provided in certain areas under this plan. They are not intended to be, nor shall they be construed as, limiting specifications or requirements. At a minimum, the Contractor will be required to take all steps and measures which would be taken by a prudent building owner to maximize the life expectancy of the property, including having a journeyman mechanic/technician(s) on-site for a minimum of 8 hours per day, 8:30am-5:00pm.

All mechanical, electrical, utility, interior and exterior architectural and structural systems in the buildings shall be operated and/or maintained at the highest level of efficiency compatible with the current energy conservations requirements, and maintained at an acceptable level, throughout the Contract performance period.

An "acceptable level" of maintenance is defined as the level of maintenance, that will preserve the equipment and structure in unimpaired operating condition; i.e. above the point where deterioration will begin, thereby diminishing the normal life expectancy of the equipment and/or structure. The Contractor is responsible for performing scheduled and unscheduled maintenance and maintenance repairs, as necessary, on a 24-hour a day, 365 days per year basis including emergency call-back service.



The Contractor shall maintain the machinery spaces, shops, and storerooms in a safe, clean, and orderly manner. When work is performed in these areas, the Contractor's personnel shall clean up all debris and leave the area in a presentable condition. The machinery rooms including floors and the equipment located within the machinery rooms shall be painted as necessary to maintain the appearance of the room and equipment. When painting, the Contractor must comply with the ANSI color coding system outlined in the ANSI A13.1, Scheme for the Identification of Piping Systems, and maintain the identity (identification number) of the equipment. The Contractor must obtain the approval of the CO or their designee before storing anything in machinery spaces.

#### Utilities

##### Utility Provider Information:

Utility Type: Electric  
Utility Provider:  
Account#:  
Accounting String:  
Contract Period:

Utility Type: Electric (Lights & Plugs)  
Utility Provider:  
Account#:  
Accounting String:  
Contract Period:

Utility Type: Sewer Service  
Utility Provider:  
Account#:  
Meter#:  
Accounting String:  
Contract Period:

Utility Type: Water Service  
Utility Provider:  
Account#:  
Meter#:  
Accounting String:  
Contract Period:

Utility Type: Fire Protection  
Utility Provider:  
Account#:  
Meter#:  
Accounting String:  
Contract Period:

Utility Type: Gas  
Utility Provider:  
Account#:  
Meter#:  
Accounting String:

Contract Period:  
Deduction Meter-

Overtime/Reimbursable

Overtime utilities are provided upon request except with agencies that have computer rooms that require 24/7 cooling, which is billed quarterly.

#### OVERTIME UTILITIES

AGENCY	AREA REQUIRING OT	LOCATION	DURATION
--------	-------------------	----------	----------

---

## Startup & Shutdown Times & Procedures

Normal Operating Hours:

Supervisory Building Manager:

Property Manager:

Engineer Tech:

Assistant Property Manager:

Number of Occupants:

Number of Parking Spaces:

Primary Tenant:

Classifications:

Building Number:

Construction Date:

Accessibility Compliant:

Security Level:

Tier Designation:

Congressional District:

Structure:

Design and Construction:

Gross Square Feet:

Rentable Square Feet:

Useable Square Feet:

Floors:

## 2.0 OPERATIONAL PROCEDURES AND SITE PLANS

This Section describes the procedures for operating the building's HVAC systems.

### 2.1 BOILER PLANT

As Applicable

### 2.2 CHILLER PLANT:

As Applicable

### 2.3 DOMESTIC HOT WATER PLANT

As Applicable

### 2.4 HEATING BOILER PLANT

As Applicable

### 2.5 GENERAL PLUMBING AND DOMESTIC WATER SYSTEMS

As Applicable

### 2.6 WATER TREATMENT PLANS

As Applicable

### 2.7 FIRE ALARM SYSTEMS

As Applicable

Fire Protection Drawings-

Contractor Information

Service Provider:

Contract #:

Contact:

Base:

Option 1:

Option 2:

### 2.8 FIRE SUPPRESSION SYSTEMS

As Applicable

### 2.9 SITE PLANS AND DRAWINGS

As Applicable *(Note to preparer: You may refer to location of applicable site plans and drawings.)*

### 2.10 EQUIPMENT INVENTORY

As Applicable *(Note to preparer: You may refer to location or add as an attachment)*

# 3.0 HVAC EQUIPMENT DESCRIPTIONS AND SEQUENCES OF OPERATION

## 3.1 PENTHOUSE MECHANICAL ROOM

As Applicable

## 3.2 PENTHOUSE AIRHANDLERS

As Applicable

## 3.3 MAIN AIRHANDLERS

As Applicable

AFTER HOURS OCCUPANCY:

Air Handling Units:

AHU	Floor Serviced	Location
-----	----------------	----------

Mechanical Drawings-

Indoor Air Quality

## **4.0 ELECTRICAL DISTRIBUTION AND SPECIFICATIONS**

---

### **4.1 EMERGENCY GENERATORS**

As Applicable

### **4.2 *MAIN ELECTRICAL SUBSTATIONS***

As Applicable

### **4.3 ADDITIONAL SUBSTATIONS**

As Applicable

### **4.4 LIGHTING CONTROL SYSTEMS**

As Applicable

Lighting Settings:

Levels: (FYI: Lighting levels can be found in the FPMR. Please note that these levels are subject to change)

Lighting On/Off Times:

Site Lights:

Elevator Lobby lights:

Tower Lobby Lights:

Courtroom Lights:

Parking Garage Lights:

During the weekends no interior lighting comes on, only site lights come on.

Electrical Lighting Drawings (location):

## **5.0 ENERGY MANAGEMENT CONTROLS AND SPECIFICATIONS**

---

### **5.1 BUILDING AUTOMATION SYSTEM**

During normal working hours, ventilation shall be maintained in accordance with the latest guidelines from ASHRAE, Ventilation for Acceptable Indoor Air Quality. The Contractor's responsibility to comply with these requirements is limited by the capacity of the building's HVAC equipment, Building Automation System (BAS), and outside environmental conditions.

### **5.2 DUAL DUCT VAV TERMINALS**

As Applicable

### **5.3 COOLING VAV TERMINALS**

As Applicable

## **6.0 ARCHITECTURAL AND STRUCTURAL SYSTEMS MAINTENANCE**

---

### **6.1 FAÇADE**

As applicable

### **6.2 ROOFS**

As Applicable

### **6.3 PARKING DECKS**

As Applicable

### **6.4 RAIN GUTTERS**

As Applicable

### **6.5 DRAINS**

As Applicable

### **6.6 WINDOWS**

As Applicable

### **6.7 VERTICAL TRANSPORTATION (ELEVATORS/ESCALATORS)**

As Applicable

General Contract Information:

Service Provider:

Call Center:

Location Code for Kone:

Contract #:

Contact:

## **7.0 TOUR PROCEDURES AND MAINTENANCE DOCUMENTATION**

---

### **7.1 TOUR PROCEDURES**

Watches involve performing certain tasks required for the operation of boilers, compressors, and related equipment in a centralized location. Watches include, but are not limited to, starting equipment and loads, and making adjustments at the central control center, and taking water samples, making tests, and adding chemicals as required. A watch does not mean that the operator stays in the same location for an entire shift. The time spent is that required to perform the tasks.

### **7.2 DAILY CHECKLIST**

As Applicable

### **7.3 WEEKLY CHECKLIST**

As Applicable

### **7.4 SCHEDULED MAINTENANCE**

As Applicable

### **7.5 CORRECTIVE MAINTENANCE AND REPAIRS**

As Applicable

### **7.6 PLANNED PREVENTIVE MAINTENANCE**

Preventive maintenance includes, but is not limited to greasing, oiling, adding refrigerant, changing filters, cleaning, adjusting, replacing belts, and replacing of other expendable items. It also includes scheduled work on items of equipment or systems required to provide continuing operation, to preclude unnecessary breakdowns and to prolong the life of equipment or systems. Such work will be required to be performed without disruption to the building occupants operations during their normal business hours. Disruptive work will be required to be performed during other than normal building hours.



## **8.0 SERVICE CALL, MAINTENANCE AND REPAIR PROCEDURES**

---

### **8.1 TENANT REQUEST AND SERVICE CALLS**

As Applicable

### **8.2 AFTER HOURS CALLS**

As Applicable

### **8.3 EMERGENCY SERVICE CALLS**

As Applicable

## **9. BUILDING SECURITY PROCEDURES**

---

### **9.1 ACCESS, SIGNAGE AND IDENTIFICATION**

As Applicable

### **9.2 MONITORING**

As Applicable

### **9.3 BAGGAGE INSPECTIONS**

As Applicable

### **9.4 LOADING DOCK ACCESS**

As Applicable

### **9.5 PARKING LOT ACCESS**

As Applicable

### **9.6 AFTER HOURS ACCESS**

As Applicable

### **9.7 PATROLS**

As Applicable

### **9.8 REPORTING INCIDENTS AND RESPONDING**

Contract Employee Responsibilities:

The Contractors shall assume full responsibility and liability for compliance with all applicable regulations pertaining to the health and safety of personnel during the execution of work, and shall not hold the Government responsible for any action on its part or that of its employees or subcontractors, which results in illness, injury, accident, or death.

GSA Employees must report using the following procedures:

For accidents involving non-GSA employees or property damage accidents: use GSA Form 3620. The GSA supervisor in charge of the area should complete this report and gathering of necessary information and photographs, building, or equipment involved.

For accidents involving GSA employee injury/illness: use GSA form 3623, CA-1, and CA-2. The supervisor of the injured/ill employee should complete the GSA Form 3623. Reporting on the CA-1 and CA-2 is the responsibility of the injured/ill employee. All reports are to be forwarded to the Ohio Service Center within 5 days of the incident. The FPS Contract guards are to also fill out an incident report for all types of injuries.

### **9.9 FIRE INCIDENT INVESTIGATIONS**

As Applicable

## **10.0 EMERGENCY PLANS AND HAZMAT PROCEDURES**

*[[[Note to preparer: It is not necessarily intended that you physically include all emergency plans in the Section, but instead you can indicate their location. For those items that have no separate plans they should be included here]]]*

---

### **10.1 SHELTER IN PLACE LOCATIONS**

As Applicable

### **10.2 BUILDING EVACUATIONS ROUTES & MEETING PLACES**

As Applicable

### **10.3 BOMB OR BIOHAZARD CONDITIONS AND SYSTEM SHUTDOWN PROCEDURES**

As Applicable

### **10.4 ELEVATOR EMERGENCY PROCEDURES**

As applicable

### **10.5 FIRE EXTINGUISHER, DEFIBRILLATOR, AND PULL SWITCH LOCATIONS**

As Applicable

### **10.6 ASBESTOS MANAGEMENT**

As Applicable

### **10.7 HAZARDOUS MATERIAL AND HAZMAT WASTE MANAGEMENT**

As Applicable

### **10.8 UNDERGROUND STORAGE TANKS**

As Applicable

### **10.9 LEAD PAINT MANAGEMENT**

As applicable

### **10.10 ENERGY LOAD CURTAILMENT PLANS**

As Applicable

### **10.11 WATER CURTAILMENT PLANS**

As Applicable

### **10.12 LOSS OF PERSONNEL**

As Applicable

### **10.13 EMERGENCY NUMBERS**

As Applicable

### **10.14 DISASTER AND RECOVERY PROCEDURES**

As Applicable

### **10.15 FIRE PUMPS**

As Applicable

### **10.16 SUMP PUMPS**

As Applicable

### **10.17 SEWAGE EJECTORS**

As Applicable

### **10.18 PRESSURE BOOSTERS**

As Applicable

### **10.19 PRESSURE REDUCING STATIONS**

As Applicable

### **10.20 BACKFLOW PREVENTORS**

As Applicable

### **10.21 ALL MAIN SHUT OFF LOCATIONS & PROTOCOL**

As Applicable

# EXHIBIT 8

## J.8. Smart Building

*[[[Note to Spec Writer: If a region elects to include this language in their Contract they should be aware that there may be some requirements for installing additional equipment and those requirements should be handled outside of the O&M Contract and follow appropriate Contracting guidelines. If included remove exhibit, mark reserved and annotate table of contents]]]*

## GSA Smart and Sustainable Buildings

*[[[Remove and mark “Reserved” if building has not deployed GSA Smart and Sustainable Building Technologies or if this Section is covered under another SOW.]]]*

### Smart Technologies - Background and Purpose

**Background** Because of current Government energy reduction executive orders and regulatory mandates, GSA Public Buildings Service has several programs in development and at various stages of implementation that O&M Contractors should be aware of. One of these programs includes Smart Building technologies. Currently, approximately 250 buildings in the GSA portfolio are undergoing Smart Technologies design and implementation enhancements. Some facility projects involve complete detailed design-built from the infrastructure to completed project designs. Others involve modest retrofits to update key building controls systems. A key objective of implementing Smart Technologies in GSA buildings is to capture and make available more real-time performance data about the individual building systems (HVAC/BAS, Lighting, and Advanced Meters). This data will be made available to O&M Contractors and building support personnel and will increase in significance over time as more details are learned as GSA analyzes this new trend of monitoring building performance at a detailed level. O&M Contractors should be aware that if they are involved in operational support of one of GSA's newer Smart Buildings, that tools, processes, data, and some procedures may need to be modified to meet GSA requirements for long-term improved operational efficiencies as a result of the investment the Government is making in these new technologies. O&M Contractors should continue to monitor developments in this area as more buildings in the GSA portfolio deploy Smart Technologies.

#### ***1.0 Trend Toward Integrated Building System Technologies***

New building technologies, and their convergence with traditional information technology, have altered the way in which facilities can be monitored, maintained, and operated. Trends in building systems technology have provided opportunities in the market place to alter the way facilities managers use real time data to operate their facilities more efficiently. Building Systems are getting increasingly more dependent on software, IT networks (physical and wireless), servers, internet access, and cloud-based/hosted solutions. This shift in domain expertise has outpaced traditional design and construction practices. As a result, building operations and maintenance staff need to adapt, be more proactive, and leverage the availability of real-time data to help them perform building systems support more effectively. This may involve more

thorough planning and redefining some processes, procedures, and job roles in order to better operate the facilities that have these newer technology based systems.

## **GSA Specific Smart & Sustainable Building Objectives Related to O&M Contract Support**

*[[[Remove and mark “Reserved” if there is no GSA Smart and Sustainable Building Technologies in this facility or if this Section is covered under another SOW.]]]*

### ***C.22.1 Control Systems***

The Contractor shall maintain control systems and sequences as documented in facility operations plan. The Contractor will document all Integrated Building Systems set-points, schedules and alarms and present them to the Government for initial review and backup and annually thereafter.

On an as-needed basis, submit a request to owner for additional recommended trending, monitoring, graphics, or control points with intent to improve building operations, energy efficiencies, and performance of O&M duties. Consider 80/20 rule focusing recommendations on 20% of building equipment that impact 80% of operating efficiency and costs

The Contractor shall be responsible for making set point adjustments as necessary and appropriate to meet GSA objectives in facility operations plan. This action requires the approved by CO or designee.

The Contractor shall be responsible for keeping building system software functioning and for upgrading/re-installing software on computers or building system controllers as necessary to keep current with manufacturer release levels and GSA IT support policies and procedures. *[[[Section 35.4 BAS Control System will need to be change where we state ‘The Contractor is not responsible for upgrading software but should inform GSA.’]]]*

### ***C.22.3 Smart Buildings***

The Government is taking proactive steps to converge a building’s monitoring and control systems on common GSA-supported network infrastructure to enable access to real-time controls systems performance data (i.e. data points). If the facilities’ building systems network was installed and maintained by GSA CIO, then this building has Government-furnished (GFE) network equipment and Smart Technologies deployed. This also means that the Contractor will potentially need to coordinate troubleshooting and support with building system Contractors (HVAC, Lighting, etc.) and GSA CIO to help identify and resolve issues.

#### **Integrated Building Systems**

Assist the Government by ensuring that all relevant equipment vendors, with equipment installed in facility, maintain their respective systems (i.e. HVAC, BAS, Lighting, Advanced Metering, etc.) in accordance with GSA Smart and Sustainable Buildings intended objectives (i.e. open systems running on a single GSA Building Systems data network)

The Contractor shall act as a liaison and facilitate efforts between their respective building-specific monitoring and control system subcontractors and work through the CO or

their designee GSA with the Information Technology Office (PBS CIO) on issues related to O&M operations.

The Contractor shall make recommendations to the government (as applicable), on improvements to sequences of operations. Communications for alarms set up for remote notification shall be tested on a recurring basis.

The contractor shall be responsible for keeping manufacturer and/or O&M building system software (BAS, BMS software) functioning. This includes, but is not limited to, upgrading and/or re-installing manufacturer's building system software on GFE computers and manufacturer's building system controllers as necessary to keep current with manufacturer recommended release levels and to keep in compliance with all applicable GSA IT support policies and procedures

*[[[Remove and mark "Reserved" if there is no GSA Smart and Sustainable Building Technologies in this facility or if this Section is covered under another SOW.]]]*

***H.9.4 (Qualifications of Technicians) or H.10 (Qualifications of BAS Technicians)***

All Contract personnel involved in the operation, adjustment, and maintenance of all BAS systems including energy management systems, modern converged technologies (Smart and Sustainable Building Technologies) must be trained and qualified. The Contractor shall provide to the CO or their designee documentation of the level of experience, including any certificates of training, for all employees who will be involved in this function. This includes, but is not limited to, skill sets involving Internet Protocol (IP) based Building Automation Systems (BAS), Information Technology (IT) Ethernet networks, and Building Management expertise to effectively understand and recommend troubleshooting procedures in the new converged technologies environment.

Contractors shall hire well-rounded resources capable of understanding converged technologies to better facilitate troubleshooting and building systems problem resolution.

The Contractor shall be proficient in applicable controls systems (e.g. JCI, Honeywell, Siemens, Delta, Automated Logic, Alerton, and Tridium). The Contractor shall be aware of building systems running on GSA IP Enterprise Network and capable of initiating trouble shooting if network communications is suspect. This means being familiar with procedure for logging GSA IT Help Desk ticket and following up to ensure ticket is being worked by assigned party. Some familiarization with the use of Integrated Control systems, GSA IP Addresses, function of network routers, function of network switches, networks communications, and BAS software will be necessary.

All BAS Technicians shall be certified in the building-specific integrated system controls certification (i.e. Tridium Niagara, JCI/Metasys, Siemens Apogee, etc.). GSA's intent is to align the correct BAS technician certification for the BAS installed in the building.

*[[[Remove and mark "Reserved" if there is no GSA Smart and Sustainable Building Technologies in this facility or if this Section is covered under another SOW.]]]*

***H.8 Personnel Training, H.8.2 – Smart and Sustainable Buildings (SSB) Training***

*<Insert following bullet points under Section H.8.2>*

Mandatory Training (at least one staff member):

- One-hour “GSA Smart and Sustainable Buildings (SSB) Overview”
  - Module 1 - Includes GSA FMSP Smart and Sustainable Buildings Overview
  - Module 2 - Includes PBS CIO Support Procedures

Optional Training (Recommended for more in depth proficiency):

- Penn State GSA Smart Buildings Course (<http://smartenergyacademy.org/gridstar/>)

*[[[Insert this language into Section “C.2 Definitions”]]]*

## **Definitions**

### Building Automation System (BAS)

The “building automation system” is a system controlling and monitoring building HVAC, and possibly other systems, to include all device, field, and global controllers, instrumentation, networking infrastructure, computers and peripherals, software, programming, database files, and licenses.

### Controls and Control System

A “control system” is any low-voltage control, communication and monitoring system, including but not limited to stand alone devices, field and global controllers, instrumentation, networking infrastructure, computers and peripherals, software, programming, database files, and licenses. Examples are the Building Automation System (BAS), Advanced Metering System (AMS), and lighting control systems. Fire protection systems and security systems are excluded from this definition for purposes of this Contract and are defined separately. Gateway devices, mapping software and files for data interchange between a control system and a fire protection or security system are considered part of the control system.

### GSAlink.

The GSAlink initiative is one of GSA’s strategic projects. The purpose of this initiative is to leverage automated building analytics technology to measure and substantially lower operational expenses in the existing owned building portfolio. GSAlink is a hardware and software solution to capture real-time building systems point data, apply rules-based analytics software to the data, and spot trends and deficiencies while reporting actionable events to building operators, O&M Contractors, and GSA Service Center property managers.

### Open Systems

An “open systems” solution is based on industry standard open protocols. This environment and solution is typically designed, procured, installed and maintained in a manner that provides the building owner with as many competitive configuration options as possible while maintaining the integrity of the supported manufacture system. The solution must be procured and installed so that the result delivers device level interoperability amongst different manufactures residing on a common network. In addition, the solution must be maintained with no future need for the original (installing) Contractor. Additions, modifications, and retrofits can easily, without significant additional cost, be made to the system without dependence on the original installing



Contractor or require substantial engineering or other technical development. Contractors shall specify Open Systems solutions where feasible and reasonably possible.

Government-furnished Equipment (GFE)

Any required computer or server hardware (i.e. PC, laptop) and peripherals (i.e. mouse, keyboard, monitor) and/or routing and switching equipment, used to provide GSA network connectivity, must be government-furnished and must be provided by the GSA.

*[[[Insert this language into Section “C.3 References”]]]*

## **Applicable References**

- Technology Policy for PBS-Owned Building Monitoring and Control Systems  
([https://sharepoint.pbs.gsa.gov/pbs/energyit/ESI/Library%20of%20docs%20saved%20on%20this%20site/ImplementationGuide/Technology%20Policy%20for%20PBS-Owned%20Buildings%20Monitoring%20and%20Control%20Systems\\_4.5.11.pdf](https://sharepoint.pbs.gsa.gov/pbs/energyit/ESI/Library%20of%20docs%20saved%20on%20this%20site/ImplementationGuide/Technology%20Policy%20for%20PBS-Owned%20Buildings%20Monitoring%20and%20Control%20Systems_4.5.11.pdf))
- Building Technologies Technical Reference Guide  
([https://sharepoint.pbs.gsa.gov/pbs/energyit/ESI/Library%20of%20docs%20saved%20on%20this%20site/ImplementationGuide/Building%20Technologies%20Technical%20Reference%20Guide\\_FINALDRAFT\\_6.7.11.doc](https://sharepoint.pbs.gsa.gov/pbs/energyit/ESI/Library%20of%20docs%20saved%20on%20this%20site/ImplementationGuide/Building%20Technologies%20Technical%20Reference%20Guide_FINALDRAFT_6.7.11.doc))

# EXHIBIT 9

## J.9. Water Treatment

INSTRUCTIONS, CONDITIONS, AND NOTICES TO

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## **1.0 Introduction**

This appendix establishes mandatory standards for water in HVAC and domestic water systems in GSA facilities, along with information related to the intent of the standards and guidelines that in most circumstances can be used to construct a water treatment program that will be approved by GSA. Treatment standards are mandatory; procedural instructions in these guidelines are advisory unless required by law or regulation. Subject to GSA approval, maintenance Contractors generally may propose alternative programs where accompanied with sufficient technical data and implementation detail for GSA to determine the likelihood of success of such an alternative program. Any program approved by GSA may be subsequently disapproved if results are unsatisfactory.

Regardless of the complexity or size of a loop, a qualified water treatment Contractor or personnel should be consulted or employed to help the building maintenance personnel develop a water treatment program specific to the needs of each system. The treatment chemicals themselves should be purchased through a licensed supplier that specializes in commercial and/or industrial water systems. Many water treatment chemicals require licenses for specific uses and are regulated by Federal, state, and Local governments. Maintenance Contractors are responsible for selecting and submitting for approval an appropriate program, and for compliance with laws regarding chemical discharge and usage.

Maintenance Contractors are responsible for providing all instrumentation and test equipment necessary to monitor compliance with these standards (e.g., installation of coupon racks or other corrosion monitoring equipment where not already installed).

## **2.0 Types of Recirculation Water Loops**

There are five basic open and closed loop water systems used for the daily operation of commercial buildings. Each system is vital to the everyday operation of the buildings mechanical systems. The following open and closed loop water systems are described as follows.

### **2.1 Open Loop Cooling Water System**

An open loop cooling water system generally uses cooling towers to cool condenser water that serves chilled water central plants, water source heat pumps and computer room air conditioning units. There are cases where a waterside economizer “free cooling” system is used in place of a chiller to cool condenser water during periods of low ambient conditions. During “free cooling” mode the chilled condenser water is passed through a heat exchanger to cool the closed loop cooling or chilled water loop.

An open loop is exposed to outside contaminants and requires frequent maintenance, chemical tests, and chemical treatment that should be determined by a water treatment Contractor. In general, large systems require chemical tests be performed weekly and a water treatment Contractor to inspect the chemical systems monthly. The four main goals of maintaining an open loop cooling system are; inhibition of mineral scale, corrosion, minimizing bacterial contamination, and general fouling inhibition. See Section 3.0 for a detailed description of cause and effect when using chemical inhibitors.

### **2.2 Closed Loop Cooling Water Systems**

A closed loop cooling water system can either be used for chilled water or condenser water. In a closed loop chilled or condenser water system the cooling water is circulated through the chiller or heat exchanger where it is cooled then pumped through air handlers’ cooling coils, fan coil units, computer rooms units, water source heat pumps, etc.

In view of the fact that a closed loop cooling water system will not be exposed to as much outside containments and no evaporation as in an open loop system, the dissolved mineral concentration in the system will remain relatively constant and there will be virtually no need for blow down. Once the system is filled, every effort should be made to limit the amount of water leakage from seals, water sampling, valve testing and other routine system maintenance. When water leaks out of the system, it will be replaced with untreated makeup water. This water introduces additional minerals and dissolved oxygen into the system. Consistent chemical treatment is sustained with the use of chemical tablet “slug” feed water treatment products.

The treatment program for closed loop cooling water systems requires less frequent testing. The goal of the closed loop program is to inhibit corrosion, inhibit mineral scale formation, and inhibit bacteria growth. See Section 3.0 for a detailed description of cause and effect when using chemical inhibitors.

### **2.3 Steam and Condensate Recirculation Systems**

Steam systems are closed loop systems that produce either saturated low pressure or superheated high-pressure steam via a steam boiler. The condensate water, with the addition of makeup water, is re-circulated through the steam boiler. A steam system should have an automated water makeup, a mechanical deaerator, condensate pumps, feed water pumps, steam traps, low feed

water flame cut off controls and chemical pot feeders for condensate and makeup water treatment. The steam system will be a collection of steam regulators, steam turbines, heat exchanges for heating purposes, or through an absorption chiller to indirectly produce chilled water for space cooling.

The evaporation of water and elevated temperatures cause most of the minerals present in tap water to bond with each other, causing an increase in system mineral concentration. The four main goals to maintaining a steam system is prevention of mineral scale formation, oxygen corrosion, general corrosion, and condensate corrosion. Biocides are not needed in a steam system because bacteria do not grow in high temperature environments. Alternatively, if steam is supplied by a Local utility, then the steam has already been chemically treated and further chemical treatment may not be necessary. See Section 3.0 for a detailed description of cause and effect when using chemical inhibitors.

## **2.4 Closed Loop Hot Water Systems**

A closed loop hot water heating system is not exposed to a great deal of outside containments. Therefore, the dissolved mineral concentration in the system will remain relatively constant and there will be virtually no need for blow down. Once the system is filled, every effort should be made to limit the amount of water leakage from seals, water sampling, valve testing and other routine system maintenance. When water leaks out of the system, it will be replaced with untreated makeup water. This water introduces additional minerals and dissolved oxygen into the system. Consistent chemical treatment is sustained with the use of slug feed water treatment products.

The treatment program for this system is very similar to the closed loop cooling system. The key difference is that hot water systems require more corrosion inhibitor as a result of higher water temperatures. In fact, most hot water systems require two to three times the corrosion inhibitor of closed loop cooling water systems. The goal of a closed loop hot water treatment program is to inhibit corrosion, mineral scale formation, and bacteria growth. See Section 3.0 for a detailed description of cause and effect on using chemical inhibitors.

## **2.5 Domestic Hot and Cold Water System**

A domestic hot and cold water system provides potable water for washing and general domestic use. The water within these systems will contact food, people, or will be consumed, so there is no chemical treatment used for this system to prevent mineral scale or corrosion due to water supplied by the Local utility. The only water treatments used for these systems is the addition of water softeners and filtration systems. The reduction of the corrosive and scaling tendencies of oxygenated hard or softened water is done by repairing leaky fittings and fixtures, limiting the velocity of the circulating water, and/or limiting the operating temperature of the hot water system.

### **3.0 Water Chemicals Treatment Additives**

Environmental regulations, handling guidelines and the chemical additives for water systems should be provided by a certified Local water treatment consultant. It is the building operator's responsibility to ensure compliance with municipal by-laws, and environmental regulations when disposing of chemicals and handling accidental spills. Disposing of chemically treated water into the sewer system must be monitored in blow down logs and not allowed to exceed levels specified by municipal sewage utility by-laws.

The chemical additives suggested herein are organized by class to encompass a variety of chemical additives that are used in open and closed water loops and steam boiler systems.

#### **3.1 Mineral Scale Inhibitor**

Mineral scale is the precipitation of dissolved minerals such as calcium carbonate onto the surfaces of the cooling tower, boiler, heat exchangers tubes, and piping. This mineral scale forms an insulating layer on the surfaces that inhibits heat transfer and restricts flow through the system. Mineral scale also promotes corrosion and fouling in open loop and steam systems. All re-circulating water and steam boiler systems should have a mineral scale inhibitor as part of their water treatment program.

Mineral scale inhibitors are separated into two main categories, sludge conditioners and dispersants. Sludge conditioners are typically used when there is a relatively high concentration of calcium and magnesium in the makeup water. Sludge conditioners are crystal modifiers that allow the minerals to precipitate but interfere with the structure of the crystal to help form a soft sludge that can be easily removed from the steam boiler or cooling tower through blow down. Dispersants are usually polymer-based molecules that help to keep the trace minerals in solution so that they do not precipitate into scale deposits. The mineral scale inhibitors are especially needed when there is little or no pretreatment of the makeup water or when filtration equipment is not reliable. Even with excellent control of the scale inhibitor, chemical scale formation still occurs.

Water treatment consultants use computer models to determine the type of scale inhibitor needed as well as the limits for system pH and total dissolved solids (TDS). These computer models take into account the specific operating parameters of the system and help the water treatment consultant to choose a specific water treatment program that will work.

#### **Open Loop Cooling Water System:**

An open re-circulating cooling water treatment program commonly uses a chemical additive that is a combination of a mineral scale inhibitor and a corrosion inhibitor. The type and dosage of mineral scale inhibitor needed is dependent upon the concentration and composition of the minerals in the makeup water, the pH of the cooling water, and the temperature of the cooling water.

The overall scale inhibitor program for a cooling water system may consist of a mineral scale inhibitor additive (such as a polymer dispersant), acid for pH control, and limits for the total dissolved solids and/or conductivity of the cooling water. Acid feed and pH control will not be needed in every system.

#### **Steam Systems with Re-circulating Water:**

In steam boilers, the buildup of an insulating layer can lead to tube failure and efficiency losses. Calcium and magnesium are the most abundant forms of mineral scale found in a steam boiler system because the solubility of these two minerals decreases as the temperature increases. To minimize the potential for mineral scale formation, most steam boilers have some type of makeup water pretreatment to remove certain minerals from the water before it enters the boiler. The goal of most pretreatment equipment is to minimize the concentration of these two minerals in the makeup water so that there is a less significant chance that they will precipitate and form a crystal scale deposits. Even with good pretreatment, mineral scale inhibitors are needed in all steam boiler systems.

Dispersant mineral scale inhibitor programs are used in steam boilers that have good pretreatment and very low levels of calcium and magnesium in the makeup water. Dispersants are usually only used when the total hardness in the makeup water is greater than 5 ppm consistently. The dispersants are usually a polymer based molecule that helps keep the trace minerals in solution so that they do not precipitate into scale deposits.

#### **Closed Loop Cooling Water and Hot Water (Heating) Systems**

In a closed loop system the mineral concentration is relatively stable because very little makeup water is needed. This helps to minimize the need for mineral scale inhibitors. In systems that have poor quality makeup water, with a total hardness above 300 ppm, it is best to pre-treat the water with softeners to remove calcium and magnesium from the makeup water. In most cases, pretreatment of the makeup water is not necessary. Closed loop cooling and hot water systems should be treated with a polymer dispersant mineral scale inhibitor. This scale inhibitor is usually combined with a corrosion inhibitor in a one-drum formulation.

### **3.2 Corrosion Inhibitor**

#### **Open Loop Cooling Water Systems:**

The corrosion inhibitor chemical treatment protects the metal piping from degradation over time. The type of corrosion inhibitor that is used depends upon the specific metallurgy present in the system as well as the chemistry of the makeup water and pH level in the water. Corrosion inhibitor additives are intended to provide a protective layer on the interior walls of piping which stops the occurrence of corrosion in the system. A certified chemical water treatment consultant should be contacted to determine the specific type and amount of corrosion inhibitor necessary for each building's distinct system.

In most cases, there is more than one type of metallurgy in a system, such as galvanized steel, copper, stainless steel, etc. Different metals require distinct chemicals to prevent corrosion, so it is important that the corrosion inhibitor portion of the program have additives that are specific to each type of metal. In most cases, blends of different corrosion inhibitors are used to ensure that all of the metal is protected.

### **Closed Loop Cooling and Hot Water Systems**

Corrosion is the principal concern in a closed loop cooling and hot water systems. There are many different types of corrosion inhibitors available on the market, but the most common products are nitrite based. As with any corrosion inhibitor program, the type of program used is determined by the type of metals used throughout the system. Mild steel systems should be treated with nitrite, molybdate, or phosphonate type inhibitors. Systems containing copper should have some type of azole product.

If bacterial contamination is a problem, Nitrite programs should be avoided. The nitrite corrosion inhibitor can act as a food source for bacteria. The bacteria will convert the Nitrite into Nitrate and Ammonia. This will destroy the corrosion inhibitor function of the product. A certified chemical water treatment consultant will be able to find the best product for this type of system.

There is one difference between a closed loop cooling and heating systems, which is the dosage of the corrosion inhibitor. The corrosion inhibitor of closed loop hot water system will have dosage 2 – 3 times greater than the dosage for a closed loop cooling water system.

### **3.3 Bacteria Contamination Control**

The control of the bacteria growth is the most important part of an open loop cooling and closed loop cooling and hot water treatment program because bacterial contamination can lead to fouling, mineral scale, and corrosion. Bacterial contamination is controlled through the use of biocides. Below is a description on bacterial contamination control that is used for open loop cooling, closed loop cooling, and closed loop hot water systems.

### **Open Loop Cooling Water Systems**

Open loop cooling water systems are inherently prone to bacterial contamination without a proper water treatment. High bacteria levels in a cooling water system can lead to bio-deposits (algae for example) and increased fouling that can reduce heat transfer in the heat exchangers and cooling tower. The bio-deposits and increased fouling can reduce water flow through the system if there is improper water treatment.

In view of the fact that open cooling water systems are highly susceptible to bacteria growth, the water treatment program should have some type of biocide chemical additive. Biocides kill living organisms and/or bacteria and can be categorized as either oxidizing or non-oxidizing. An oxidizing biocide, when applied at the correct dosage, will kill all types of bacteria. A non-oxidizing biocide targets certain bacteria and will not kill some types of bacteria.

A non-oxidizing biocide can be compared to an Anti-biotic that is used to treat bacterial infections in people. Over dosing a system or improper usage of a non-oxidizing biocide can create strains of bacteria in the cooling water system that are resistant to the biocide. Limit the program to the use of non-oxidizing biocides alone is never recommended. It is good practice to utilize both an oxidizing biocide and a non-oxidizing biocide to strictly control bacteria contamination. This method is more costly so some building managers chose to only utilize only oxidizing biocides.

The types of oxidizing biocide needed are dependent upon the physical limitations of the facility, safety concerns, costs, and maintained pH of the recirculation water. For example, bromine based



oxidizing biocides should be used any time the pH of the water in the system is above 7.5. A water treatment supplier or consultant can provide specific information regarding the different types of oxidizing and non-oxidizing biocides that will suit the needs of your system.

It is important to note that there are both Federal and state laws that regulate the usage and application of biocides for commercial and industrial usage. When choosing a water treatment supplier or consultant, make sure that they are properly licensed and registered in your area to provide guidance on the usage of biocides or pesticides. Also, it is important that you only use biocide products that are specifically approved for use in an open loop cooling water system.

### **Closed Loop Cooling and Hot Water Systems**

It is not uncommon for closed loop systems to experience bacterial contamination, especially if these systems are treated with nitrite. In general, the more makeup water a system needs, the more likely that system is predisposed to bacteria problems.

If a closed loop system has a bacteria problem or will not maintain a nitrite residual, there are basically two options to correct the problem. The first solution is to switch the corrosion Inhibitor program to a program that does not contain a food source for bacteria. The second best solution is to utilize non-oxidizing biocides to treat the bacteria problem. A non-oxidizing biocide should be used in a closed loop system because they do not react with the corrosion inhibitors and they do not promote corrosion themselves. An oxidizing biocide will degrade most corrosion inhibitors and they can increase corrosion rates in a closed loop system. It is always best to contact a licensed water treatment consultant that can help you to determine the dosages of biocide needed and which biocide will work for your system.

### **3.4 General Fouling Inhibitor**

A fouling inhibitor is added to an open loop cooling water system when the makeup water contains high levels of suspended particles or turbidity. This includes high levels of dirt, silt, Iron, or other colloidal particles present in the makeup water, which occurs in rare applications. If this is the case, it may be necessary to add a fouling inhibitor additive to the system. These inhibitors are similar to mineral dispersants but are designed to target suspended particles instead of dissolved minerals. Generally, the mineral dispersant treatment program will be sufficient to provide general system fouling inhibition. If the mineral dispersants are not sufficient, contact a licensed water treatment consultant to see if a fouling inhibitor is needed for the system.

### **3.5 Oxygen Corrosion Control**

#### **Steam Systems with Condensate Recirculation**

Due to the high temperatures produced by a steam boiler plant, the corrosive reaction between oxygen and carbon steel is greatly increased. The oxygen corrosion in a steam system usually causes internal pipe pitting and can lead to pipe failures and leaks very rapidly. In order to protect the steam system metal from oxygen pitting, it is very important to remove the oxygen from the makeup water using both mechanical deaeration and chemical processes.

At room temperature, water normally contains about 9 ppm of dissolved oxygen. As the temperature of the water increases, the solubility of oxygen in the water decreases. A mechanical deaerator is designed to raise the temperature of the feed water to just below boiling so that the oxygen concentration in the water drops from 9 ppm to less than 0.05 ppm. After the makeup water is mechanically depleted of its oxygen content, it is still necessary to reduce it further. The further reduction in oxygen content is done with an oxygen scavenger chemical, which will reduce the concentration of oxygen to levels below 0.005 ppm.

There are many different types of chemicals used as Oxygen Scavengers. The most common Oxygen Scavenger is Sodium Bi-Sulfite. Contact a licensed water treatment consultant that will decide what product meets all the needs of a given steam system.

### **3.6 General Corrosion Control**

#### **Steam Systems with Condensate Recirculation**

A steam system should include an Oxygen corrosion control treatment program along with a general system corrosion control treatment program. A general corrosion control chemical treatment program includes the addition of buffering agents to the boiler feed water to minimize the potential for corrosion throughout the system. This buffering agent is frequently in the form of alkali solution. The alkali species neutralize acids in the water and raise the pH to create a slightly Basic environment that is less corrosive to the metal piping.

Some makeup water has enough natural alkalinity and is able to provide the feed water system with sufficient buffering, to keep the pH of the steam boiler feed water at or above 10.2. When there is not enough natural Alkalinity in the steam boiler feed water, a Caustic chemical should be added to raise the pH above 10.2. A water treatment consultant will be able to test the feed water in the steam system to determine if Caustic feed is needed and what dosage is necessary to raise the pH above 10.2.

### **3.7 Condensate Corrosion Control**

#### **Steam Systems with Condensate Recirculation**

The feed water is heated to produce high or low-pressure steam by the boiler. When this occurs some of the alkali solution species will breakdown into Carbon Dioxide (CO<sub>2</sub>) gas. The CO<sub>2</sub> vapor produced will leave the steam boiler, along with the steam and is dissolved into the condensed condensate water, after the energy from the steam is utilized. As the CO<sub>2</sub> dissolves into the condensate water it produces a carbonic acid and will dramatically increase the corrosiveness of the condensate return water. In order to protect the condensate return piping from corrosion, the condensate must be feed with corrosion control chemicals.

The two most common types of condensate water treatment are neutralizing and filming chemical additives. A neutralizing chemical additive will neutralize the Carbonic Acid in the condensate water and raise the pH above acidic levels. A filming chemical additive will provide a protective layer on the interior of the piping to keep the condensate return water from actually touching the metal. In most cases a neutralizing chemical additive will tend to be slightly more expensive, but these chemicals are usually more effective.

There are limitations to the type of condensate treatment implemented for steam systems. For example there are certain treatment programs are restricted if the steam is used for food preparation or direct contact humidification, a treatment product that is approved for use with food preparation or direct contact humidification should be used. Contact a licensed water treatment consultant or supplier for more information regarding which products can be used and for which systems these chemicals are allowed.

#### **4.0 Setting Up a Water Treatment Program**

The most important step to setting up a water treatment program is to know what systems are present in the building and what are the requirements for water properties such as pH, conductivity, total dissolved solid (TDS), etc. The water property ranges, definitions and testing schedules are in Section 5. Many of these water chemistry properties can be monitored using stand-alone controllers or global building automation system (BAS) controls. A licensed water treatment consultant should be employed to model the building's water systems and develop an appropriate treatment plan for each system. There are many treatment plans available; below is a summary of typical plans used for each system, which are used by water treatment consultants in the United States.

##### **4.1 Open Loop Cooling Water Systems**

Monitoring conductivity as a measurement of the concentration of Total Dissolve Solids (TDS) is a crucial part of controlling an open loop water system. Conductivity limits should be set by a water treatment consultant and routinely monitored to ensure that mineral scale does not form. Cycles of concentration of the system should not exceed limits set by water treatment consultant. Automated blown down controls with a conductivity meter is recommended for open loop systems. The pH of the water should be routinely monitored especially if an acidic additive is used to control the pH. Corrosion inhibitor residual tests should also be run to verify that the system is receiving the correct dosage. Routine tests should be conducted daily, weekly, or monthly to monitor oxidizing biocide residuals and bacteria concentrations to ensure Micro-Bio levels are under control. In general, bacteria concentrations in the open loop cooling water system should be less than 100,000 cfu/ml (colony forming units per milliliter) at all times.

Corrosion Monitoring should be performed using a real time on-line monitoring device or corrosion coupons with a 90-day rotation schedule. Coupon test results should show mild steel corrosion rates less than 5.0 mils per year (MPY) and Copper Corrosion Rates less than 2.0 MPY at all times.

## **Recommended Corrosion and Scale Control Programs**

### ***Program 1:***

Description:	Multifunctional Molybdate Based Corrosion Inhibitor and Dispersant
Function:	Corrosion Inhibition, Mineral Scale Inhibition
Components:	Molybdate for Mild Steel Corrosion Control Azole for Copper Corrosion Control Dispersant for Mineral Scale Inhibition
Form:	Liquid
Feed Location:	Tower Basin or Header
Control Tests:	Molybdate Residual or Test for Tracing Agent if present, Corrosion Monitoring

### ***Program 2:***

Description:	All Organic Based Multifunctional Corrosion Inhibitor and Dispersant
Function:	Corrosion Inhibition, Mineral Scale Inhibition
Components:	Phosphonate for Mild Steel Corrosion Control Azole for Copper Corrosion Control Dispersant for Mineral Scale Inhibition
Form:	Liquid
Feed Location:	Tower Basin or Header
Control Tests:	Organic Phosphate Test or Test for Tracing Agent if Present, Corrosion Monitoring

***Program 3:***

Description: Zinc Phosphate Multifunctional Corrosion Inhibitor and Dispersant

Function: Corrosion Inhibition, Mineral Scale Inhibition

Components: Zinc and Phosphate for Mild Steel Corrosion Control  
Azole for Copper Corrosion Control  
Dispersant for Mineral Scale Inhibition

Form: Liquid

Feed Location: Tower Basin or Header

Control Tests: Ortho-Phosphate or Test for Tracing Agent if present

***Program 4:***

Description: Stabilized Phosphate Corrosion Inhibitor and Dispersant

Function: Corrosion Inhibition, Mineral Scale Inhibition

Components: Phosphate for Mild Steel Corrosion Control  
Azole for Copper Corrosion Control  
Dispersant for Mineral Scale Inhibition

Form: Liquid

Feed Location: Tower Basin or Header

Control Tests: Ortho-Phosphate or Test for Tracing Agent if present,  
Corrosion Monitoring

**Bacteria Control Programs*****Program 1:***

Description: Chlorine Bleach Oxidizing Biocide

Function: Oxidizing Biocide

Components: Sodium Hypochlorite

Form: Liquid

Feed Location: Tower Basin

Control Tests: Free Chlorine Residual, Bacteria Monitoring

***Program 2:***

Description: Stabilized Chlorine Oxidizing Biocide  
Function: Oxidizing Biocide  
Components: Stabilized Sodium Hypochlorite  
Form: Liquid  
Feed Location: Tower Basin  
Control Tests: Free Chlorine Residual, Bacteria Monitoring

***Program 3:***

Description: Activated Bromine Oxidizing Biocide  
Function: Oxidizing Biocide  
Components: Separate Feed of Sodium Hypochlorite  
Separate Feed of Sodium Bromide  
Form: Both Liquid  
Feed Location: Mix together in feed line to activate Bromine then feed to  
Tower Basin  
Control Tests: Free Chlorine Residual, Bacteria Monitoring

***Program 4:***

Description: Stabilized Bromine Based Oxidizing Biocide  
Function: Oxidizing Biocide  
Components: Stabilized Bromine  
Form: Liquid  
Feed Location: Tower Basin  
Control Tests: Free Chlorine Residual, Bacteria Monitoring

***Program 5:***

Description: Solid Chlorine Bromine Tablets  
Function: Oxidizing Biocide  
Components: Chlorine and Bromine  
Form: Solid Tablet  
Feed Location: Fed from pot feeder to Tower basin  
Control Tests: Free Chlorine Residual, Bacteria Monitoring

***Program 6:***

Description: Solid Chlorine Bromine Tablets  
Function: Oxidizing Biocide  
Components: Chlorine and Bromine  
Form: Solid Tablet  
Feed Location: Fed from pot feeder to Tower basin  
Control Tests: Free Chlorine Residual, Bacteria Monitoring

***Program 7:***

Description: Isothiazoline  
Function: Non-Oxidizing Biocide  
Components: Isothiazoline  
Form: Liquid  
Feed Location: Slug fed to tower basin  
Control Tests: Bacteria Monitoring

***Program 8:***

Description: Glutaraldehyde  
Function: Non-Oxidizing Biocide  
Components: Glutaraldehyde  
Form: Liquid  
Feed Location: Slug fed to tower basin  
Control Tests: Bacteria Monitoring

***Program 9:***

Description: DBNPA  
Function: Non-Oxidizing Biocide  
Components: Dibromonitropropanamide  
Form: Liquid  
Feed Location: Slug fed to tower basin  
Control Tests: Bacteria Monitoring



***Program 10:***

Description:	Quaternary Amine
Function:	Non-Oxidizing Biocide
Components:	Quaternary Amine
Form:	Liquid
Feed Location:	Slug fed to tower basin
Control Tests:	Bacteria Monitoring

***Program 11:***

Description:	MBT
Function:	Non-Oxidizing Biocide
Components:	Methylene-bis-thiocyanate
Form:	Liquid
Feed Location:	Slug fed to tower basin
Control Tests:	Bacteria Monitoring

**4.2 Closed Loop Cooling and Hot Water Systems**

General guidelines for the control of a closed loop cooling or hot water system include the monitoring of the conductivity, pH, corrosion, and micro bio-levels. Water chemistry limits should be set by a water treatment consultant and routinely monitored by maintenance personnel to ensure that mineral scale and corrosion does not occur. Automated make up water controls along with a makeup water meter should be added to the system to maintain a consistent amount of water. The pH of the water should be routinely monitored, especially if an acidic additive is used to control the pH. Corrosion inhibitor residual tests should also be run to verify that the system is receiving the correct dosage. Monthly monitoring of bacteria concentrations to ensure biological organism levels are under control. If biological organism levels are above recommended levels, there could be a point where oxygen is entering the system, i.e. a leak in the system. Corrosion monitoring should be done with iron or copper corrosion coupons with a six month rotation schedule. Coupon test results should show mild steel corrosion rates less than 0.5 mils per year (MPY) and Copper corrosion rates less than 0.2 MPY at all times.

## **Recommended Corrosion and Scale Inhibition Programs**

### ***Program 1:***

Description:	Multifunctional Molybdate Based Corrosion Inhibitor and Dispersant
Function:	Corrosion Inhibition, Mineral Scale Inhibition
Components:	Molybdate for Mild Steel Corrosion Control Azole for Copper Corrosion Control Dispersant for Mineral Scale Inhibition
Form:	Liquid
Feed Location:	Slug feed with Pot Feeder
Control Tests:	Molybdate Residual or Test for Tracing Agent if present, Corrosion Monitoring

### ***Program 2:***

Description:	Multifunctional Nitrite Based Corrosion Inhibitor and Dispersant
Function:	Corrosion Inhibition, Mineral Scale Inhibition
Components:	Nitrite for Mild Steel Corrosion Control Azole for Copper Corrosion Control Dispersant for Mineral Scale Inhibition
Form:	Liquid
Feed Location:	Slug feed with Pot Feeder
Control Tests:	Nitrite Residual or Test for Tracing Agent if present, Corrosion Monitoring

## **4.3 Steam and Condensate Recirculation Systems**

The water treatment program for a steam and condensate recirculation system should include monitoring for conductivity. Proper Conductivity limits will vary slightly depending upon the type, age, and size of the steam boiler system. The absolute maximum conductivity level for any steam system is 5,500  $\mu\text{mhos}$ .

The alkalinity concentration in the steam boiler should routinely be monitored by maintenance personnel. There are two main types of alkalinity measured in a steam system total (M)-Alkalinity and hydroxide (OH)-alkalinity. The P-alkalinity test is used to measure the portion of M-alkalinity contributed to by Hydroxide (OH)-alkalinity. Barium chloride is added to water samples containing OH-alkalinity then sulphuric acid is added to neutralize the OH, alkalinity

is then measured to show the change in alkalinity due to the elimination of OH molecules. P-Alkalinity is used to monitor the condensate return system; to avoid corrosion within the steam boiler OH-alkalinity is measured. Proper chemical dosage for the steam boiler is ensured by running routine chemical residual tests for the oxygen scavenger and internal scale inhibitor.

In addition, it is very important to monitor the chemistry of the steam boilers feed water. Maintenance personnel should test the conductivity of the feed water on a regular basis. If makeup water pretreatment is exists, Maintenance personnel should also test the total hardness level of the feed water.

The remaining tests to be conducted on condensate return for filming Amine residual, or Iron concentration and the condensate pH should be tested to ensure that the system has received the proper chemical dosage. Further tests can be conducted by a water treatment consultant to determine if dosages should be altered to maintain proper steam, makeup and feed water chemistry.

### **Recommended Oxygen Scavengers**

#### ***Program 1:***

Description:	Sulfite
Function:	Chemical Oxygen Scavenger
Components:	Catalyzed Sodium Sulfite
Form:	Liquid or Powder
Feed Location:	Deaerator Drop Leg or Storage Section
Control Tests:	Residual Sulfite

#### ***Program 2:***

Description:	Volatile Oxygen Scavenger
Function:	Chemical Oxygen Scavenger
Components:	Various Types Available
Form:	Liquid
Feed Location:	Deaerator Drop Leg or Storage Section
Control Tests:	DEHA Residual

## **Recommended Scale Control Programs**

### ***Program 1:***

Description: Precipitating Phosphate  
Function: Sludge Conditioner  
Components: Phosphate  
Form: Liquid  
Feed Location: Boiler Steam Drum or Feedwater line  
Control Tests: Conductivity, P Alkalinity, M Alkalinity, OH Alkalinity,  
Silica, Ortho-Phosphate,  
Visual Color Test

### ***Program 2:***

Description: Polymer Dispersant  
Function: Mineral Dispersant  
Components: Polymer  
Form: Liquid  
Feed Location: Boiler Steam Drum or Feedwater line  
Control Tests: Feedwater Hardness, Polymer Residual, Silica,  
OH-Alkalinity, Tracing Agent if available

### ***Program 3:***

Description: Chelant  
Function: Sludge Conditioner  
Components: EDTA Chelant  
Form: Liquid  
Feed Location: Boiler Steam Drum or Feedwater line  
Control Tests: Feedwater Hardness, Chelate Residual, Silica,  
O-Alkalinity, Tracing Agent if available

## **Recommended Condensate Corrosion Control**

### ***Program 1:***

Description:	Neutralizing Amine
Function:	Raise pH of Condensate
Components:	Various Types
Form:	Liquid
Feed Location:	Steam Header or Boiler Steam Drum
Control Tests:	Condensate pH, Condensate Iron

### ***Program 2:***

Description:	Filming Amine
Function:	Provide Protective Barrier for Condensate Piping
Components:	Various Types
Form:	Liquid
Feed Location:	Steam Header or Boiler Steam Drum
Control Tests:	Filming Amine Residual, Condensate Iron

## **Recommended General Corrosion Control (Steam Drum)**

### ***Program 1:***

Description:	Caustic
Function:	Increase Alkalinity
Components:	Sodium or Potassium Hydroxide
Form:	Liquid or Powder
Feed Location:	Deaerator storage or Boiler Steam Drum
Control Tests:	O-Alkalinity

## **5.0 Water System Testing**

Routine water chemistry tests play an important role in maintaining building water systems; they can be used to anticipate and prevent water's capacity to accelerate fouling, scaling and corrosion within a mechanical system. Chemical test kits for each building water system are available through most water treatment chemical suppliers or consultants. Section 5.2 lists the most common water tests used and a water treatment consultant can determine if a system requires more rigorous tests.

### **5.1 Water Sampling**

When water samples are taken, they should be isolated from large amounts of mineral buildup, incoming feed water or makeup water and chemical feed points. Samples should be collected during normal operation before system blow down and chemical dosing. When collecting water, allow the samples container to overfill and to avoid sample contamination use sampled water to rinse cap or container. Label the container appropriately and test sample as soon as possible. A licensed water treatment consultant will be able to give advice on chemical testing. However, building maintenance staff should be familiar with specific test procedures that should be provided by the chemical test equipment supplier(s).

### **5.2 Common Water Chemistry Tests**

#### **Conductivity:**

This test is used to estimate the Total Dissolved Solids (TDS) concentration in a water sample. Conductivity is the measures of electrical conductance in the water. In general 1.0 umhos of conductance is equal to 0.67 ppm of total dissolved solids or minerals. High levels of conductivity increase the scaling potential of the system which depends on water temperature, composition of dissolved solids and interaction with other chemical additives, and the system's metallurgy.

Cycles of concentration for a water system is measured as the ratio of mineral content (TDS) of system water divided by the mineral content (TDS) of make-up water. High cycles of concentration are an indicator of increased scaling potential. Maintaining high cycles can be done with proper chemical water treatment. Cycles of concentration are mainly monitored in open loop cooling systems and general range from 2 to 14 times the mineral content of the makeup water. The cycles of concentration of a system are completely dependent upon the TDS of the makeup water and the optimum point where corrosion and scale build-up are minimized. A water treatment consultant should specify the optimal cycles for the water system.

#### **pH:**

In general, low pH water is corrosive and has a high acidity, a meter reading lower than 7.0. High pH water is prone to scaling and is considered to be alkaline and is specified by a meter reading greater than 7.0 and less than 14. Tests for pH, acidity or alkalinity, are used to monitor chemical treatment product dosages and are used for general troubleshooting of a water system.

**Nitrite:**

The concentration of Nitrite in a closed loop cooling or hot water system's water sample is measured to monitor the corrosion inhibitor program. Nitrite is used to passivate metal surface and remove dissolved oxygen resulting in a non-corrosive water system. A water treatment consultant will set the minimum levels of nitrate that need to be maintained.

**Sulfite:**

This test is a residual oxygen scavenger test used to determine the concentration of sulfite available in a closed loop hot water system. If used as the oxygen scavenger, Sulphite must be maintained at levels between 30-50 mg/L (ppm). When Sulphite levels are not maintained corrosion will occur. Over charging a system with Sulphite will increase the conductivity of the water, corrosively and may cause the growth of sulphate reducing bacteria.

**Silica:**

Silica testing measures the concentration of Dissolved Silica in a water sample, typically for steam boiler systems. If silica levels are too high and pH is low scaling will occur. Silica can form extremely hard and dense scale on heat transfer surfaces increasing the risk of mechanical failure. Common water test sample points for silica include the boiler drum and the saturated steam.

**Corrosion Coupons:**

Corrosion coupons are small, slender circular or rectangular pieces of metal (Iron or copper) used to monitor the actual corrosion level in a water system. Typically corrosion coupons are monitored on a 90-day rotation schedule. The original dimensions, thickness, of the coupon are known. When the coupon is removed from the water loop the change in dimensions are noted as the corrosion rate. If the corrosion inhibitor program is effective the coupon's corrosion rate are below the recommended levels, as specified in Section 5.3.

**Bacteria Dip Slide:**

This test measures the concentration of bacteria in an open or closed loop cooling water system water sample. A media called "Agar" is wetted with the cooling water then is placed into a tube where Bacteria, yeasts, and fungi are grown. This test is used to confirm that biocide program in an open or closed cooling water system is effective.

**Dissolved Iron:**

Iron testing is used to monitor corrosion products in a water system. Iron testing is used to either verify that the treatment program is working or to troubleshoot a problem. Dissolved Iron levels should be less than 30 ppm. Increased corrosion problems, leaks, poor heat transfer efficiency, as well as bacteria problems can occur when the dissolved Iron level is high.

**Molybdate:**

A Molybdate test measures the concentration of Sodium Molybdate in both closed and open loop cooling water systems. A water treatment consultant will state the minimum levels of Molybdate that is needed to maintain the systems' corrosion inhibitor program.

**Organic Phosphate:**

This test measures the concentration of organic Phosphate in an open loop cooling water system. This test is needed only if an organic phosphate is used as a corrosion inhibitor. A water treatment consultant will set the minimum levels of organic phosphate that need to be maintained to prevent corrosion.

**Ortho-Phosphate:**

This test measures the concentration of inorganic Phosphate in a water sample. Ortho-Phosphate is commonly used in closed loop cooling water and hot water systems as an Iron (ferrous) and non-ferrous alloy corrosion inhibitor. If phosphate is used a minimum concentration of 200 – 300 mg/L (ppm) is required.

**Free Chlorine:**

A free chlorine test measures the concentration of active oxidizing biocide in a open loop cooling water system. Free Chlorine tests are used to monitor both Chlorine and Bromine and are more accurately described as free halogen tests. These tests are commonly used to monitor the dosage of oxidizing biocide in an open re-circulating cooling water system. Since excessive chlorine concentrations are corrosive, a free chlorine residual of 0.2 to 0.8 ppm is maintained.

**5.3 Maintenance Parameters**



The following charts list the minimum monitoring requirements for each open loop or closed loop water system. The frequency of the water testing can be increased to better maintain the performance in open loop cooling water, steam boiler, or closed loop system. The chemical test ranges and frequencies given are general and should be clearly defined by a certified water treatment consultant. A water treatment program can be controlled to an optimum level if the system is checked on a daily basis and automated monitoring equipment, such as conductivity and pH meters, are installed.

The operating ranges are **mandatory performance standards**. The maintenance Contractor must maintain water within these tolerances, unless GSA gives a written waiver for specific reasons. GSA may require more rigorous standards where circumstances dictate. The testing frequencies establish **minimum mandatory frequencies**. Contractors may test more frequently. Sporadic short-term deviations from operating ranges may not, depending on the terms and conditions of specific Contracts, result in a determination of unsatisfactory Contract performance where the Contractor takes prompt action to correct the condition.

### Open Loop Cooling Water Systems

Chemistry Tests	Frequency of Test	Operating Ranges
Tower Water Conductivity	Auto Blow down: Weekly, Monthly Manual Blow down: Daily	160-2400 mmHOS (110-1600 ppm)
Makeup Water Conductivity (Hardness)	Auto Blow down: Weekly, Monthly	40-600 mmHOS (30-400 ppm)
pH Test	Daily, Weekly	7.5 to 9.5
Corrosion Monitoring (Coupon Test)	Quarterly (3 months)	Iron: 2 to 5 mils/ year Copper: 0.2 to 0.5 mils/ yr
Bacteria Testing	Monthly	Max: $10^3$ cfu/ml (colony forming units/ ml)
Chlorides	Weekly, Monthly	Max: 250 ppm as Cl Max: 410 ppm as NaCL
Sulfites	Weekly, Monthly	50-100 ppm $\text{SO}_3$ 80-160 ppm $\text{Na}_2\text{SO}_3$
Corrosion Inhibitor Residual	Auto Chem. Feed: Weekly, Monthly	Defined by Consultant
Oxidizing Biocide Residual	Auto Chem. Feed: Weekly, Monthly	Defined by Consultant

### Closed Loop Cooling Water Systems

Chemistry Tests	Frequency of Test	Optimum Operating Ranges
pH	Monthly	7.5-9.5
Total Dissolved Solids (TDS) or Conductivity	Quarterly (3 months)	Maximum: 2000 ppm or (2500 $\mu\text{S}/\text{cm}$ )
Polyphosphates ( $\text{PO}_4$ )	Monthly	10- 20 ppm
Sulfites	Monthly	50-100 ppm $\text{SO}_3$ 80-160 ppm $\text{Na}_2\text{SO}_3$
Bacteria Testing	Monthly	Max: $10^3$ cfu/ml (colony forming units/ ml)
Corrosion Monitoring (Coupon Test)	Bi-Annually (6 months)	Iron: max. 0.5 mils/ year Copper: max. 0.2 mils/ yr
Corrosion Inhibitor Residual	Monthly	Defined By Consultant

**Steam Systems with Re-circulating Water**

<b>Chemistry Tests</b>	<b>Frequency of Test</b>	<b>Optimum Operating Ranges</b>
Total Hardness Concentration	Daily or 3 times/week	Less Than 2 ppm $\text{CaCO}_3$
Feed water pH	Daily or 3 times/week	10.5-11.5
Feed Water Conductivity or TDS	Daily or 3 times/week	1500 - 3000 ppm (2000 – 4000 $\mu\text{S}/\text{cm}$ )
Condensate Return pH	Daily or 3 times/week	8.5-9.5 pH
Condensate Return Conductivity or TDS	Daily or 3 times/week	40 ppm (50 $\mu\text{S}/\text{cm}$ )
Makeup Water Conductivity	Weekly	40-600 mmHOS (30-400 ppm)
Hydroxide Alkalinity	Daily or 3 times/week	150-300 ppm $\text{CaCO}_3$
Total Alkalinity	Auto Chem Feed: Daily, Weekly	<700 ppm $\text{CaCO}_3$
Sulphite	Daily or 3 times/week	30-60 ppm $\text{SO}_3$ 50 ppm $\text{Na}_2\text{SO}_3$
Steam Drum Scale Inhibitor Residual	Auto Chem Feed: Daily, Weekly	Defined By Consultant
Steam Drum Oxygen Scavenger Residual	Auto Chem Feed: Daily, Weekly	Defined By Consultant

## **6.0 Alternatives to Chemical Water Treatment**

There are many alternative non-chemical methods to treating closed and open loop cooling and hot water systems. Not all alternatives on the market have been proven to be effective so carefully consider products that promise too much. The products listed below have been used in many systems and have been an effective means of non-chemical water treatment. There are numerous practical studies that can be referenced, when making a decision for or against either of these non-chemical water treatments.

### **6.1 Pulsed Electromagnetic Fields**

This chemical free water treatment system uses a pulsed electromagnetic field to treat water. The common application of this technology is on open loop water processes subject to scale, corrosion, bio-fouling or bacterial contamination. Typical applications include open process water loops, cooling towers and fountains. The technology originated in the food and beverage industry as an FDA approved means for water sterilization.

The principal of operation is to generate a pulsating magnetic field around a Section of pipe in the water process system. Each generated electromagnetic wave varies in amplitude and frequency and as the wave decays harmonics are created that can be measured in the megahertz range. It is this harmonic wave that is used to treat the water.

The harmonic wave alters the minerals; i.e. Calcium Carbonates, electrical charge causing the minerals to clump together into finally divide particles; colloidal nucleation. The minerals concentrate due to evaporation and attract each other thus clumping together into fine particles. The minerals then precipitate out of solution as a non-adhesive powder in the cooling tower basin rather than on the inside of the piping and heat transfer surfaces as scale. The powder is then carried off in the water discharged from the cooling tower during blow-down.

This pulsed electro magnetic field technology also has an effect on biological organisms, such as bacteria. The effect is described by two processes known as electroporation and encapsulation. Electroporation is the electromagnetic pulse causes damage to the cell membrane of biological organisms by repeatedly exposing it to an electromagnetic field. This inhibits the reproductive ability of the bacteria thus exhausting their ability to multiply. Encapsulation is the process of calcium carbonate precipitates surrounding and encapsulating the biological organisms in the condenser water. This prevents bio-fouling and bacteria from accumulating in open water loops. Eliminating the need for oxidizing biocides; which are corrosive substances such as bleach, chlorine and bromine, directly reduces the predominance for corrosion within cooling towers.

The cycles of concentration of the process loop are increased, therefore the environment becomes more alkaline which reduces the rate of corrosion. Increased cycles of concentration equal a reduction in system blow downs which saves water and water costs. Monitoring of pH and conductivity should still be conducted on a daily or weekly basis. The installation of this system requires the installation of a conductivity sensor to monitor water basin conductivity and automatic blow down controls. Cooling tower systems using this non-chemical water treatment system typically average less than 2 mils per year, which is an industry standard. Below 2 is considered very good with, 2 to 5 being acceptable. Corrosion coupon test should be conducted on a quarterly basis.

## **6.2 Ozone Generators**

Ozone generators have been used for portable drinking water sterilization for over two decades, to kill bacteria and other bio growth in water. This method of water sterilization is used to replace the use chlorination as a water purification method. The applications of Ozone generation for water treatment have expanded to open loop cooling water systems. They are usually installed at the cooling tower of the open loop water. Cooling tower manufacturers and water treatment companies offer Ozone generators as a replacement for chemical treatment. Monitoring of pH, conductivity and bacteria testing should still be conducted on a daily or weekly basis and monthly. The installation of this system requires the installation of a conductivity sensor to monitor water basin conductivity and automatic blow down controls.

The untreated water enters the Ozone generation system and treated water is introduced back into the open loop system at the cooling tower. Ozone generator units produce Ozone by one of three possible methods; sending dried oxygen enriched air through an electrode, ultraviolet irradiator, or cold plasma. The most common method used for cooling water applications is the electrode method. The size of the generation unit is based on the size of the cooling water system and will be specified by the manufacturer. In addition, Ozone generation units require a system to clean and remove the humidity from the air. The air dryer and de-humidifier system require routine maintenance and should be conducted by the manufacturer or qualified maintenance personnel, while the unit is off.

Ozone is a strong oxidizer since it is an unstable three atom (tri-atomic) oxygen molecule. Oxygen molecules are naturally diatomic (two atom) molecules at atmospheric pressure and are necessary for life. Ozone will naturally discard its additional oxygen molecule to form a stable diatomic oxygen molecule. Leaving a highly reactive oxygen atom, this atom will destroy bacteria, biological organisms and it eliminates phenols (odor causing organic compound) through oxidation. An Ozone generator should not be installed in any occupied space because it is considered a toxic gas, according to the U.S. Environmental Protection Agency (EPA) and Food & Drug Administration (FDA). It is regulated because the same chemical properties that allow ozone to react with organic compounds outside the body give it the same ability to react similarly with organic compounds that makeup the body.

# EXHIBIT 10

## J.10. Energy & Water Operational Performance Targets

[The purpose of this document is to clearly identify the building-specific energy and water performance targets for the Contractor. These targets will be established in consultation with the Regional Energy Coordinator. This section also identifies how the energy and water performance will be monitored through the monthly progress reporting requirements of section C.11, Monthly Progress Reports, and the Building Energy and Water Efficiency Plan as required in section C.21.6, Energy and Water Efficiency.]

This document presents the Energy and Water Operational Performance Targets for [Enter building name and address including city, state zip code]

The Energy Independence and Security Act of 2007 (Public Law 110-140) requires Federal agencies to improve energy efficiency by 30% by end of FY 2015 as compared to the 2003 baseline (while targeting an annual reduction in energy use of roughly 3%). Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance mandates Federal agencies reduce potable water use intensity relative to their 2007 baseline by 26% total reduction by FY2020 (while targeting an annual reduction in water use of roughly 2% annually).

To comply with these mandates GSA has initiated internal Regional Targets on an annual basis so that the overall agency effort is successful. Each year a new internal Regional Target is established by the Energy Center of Expertise and each region is responsible for meeting that target. Within each region, it is up to the Regional Energy Coordinator, in collaboration with the Property Manager [and the O&M Contractor], to establish performance targets for each facility to ensure that the Regional Targets are met. To meet the regional objective, separate but reasonable and achievable reduction targets will be set for each building taking into account many parameters and circumstances such as historical energy and water usage, climate, age, performance, capital projects, and other mutually agreeable factors. [The solicitation development process does not explicitly involve the Regional Energy Coordinator. However, it is strongly recommended that the assigned Regional Energy Coordinator be consulted in developing building-specific energy and water performance targets. This approach will allow for establishing targets that are appropriate, reasonable and manageable for both the Contractor and GSA. When the O&M contract is being renewed/extended, it is recommended that the O&M Contractor also be consulted when establishing new/revised energy and water performance targets.] Further, the energy and water performance targets established below are to be revisited and revised as appropriate for each contract extension period, or as other major events may warrant. [Major equipment failures, building damage, tenant mission changes requiring significantly more overtime utilities, prolonged severe weather, and faulty energy or water use data are examples of events that can justify a revision to building-specific performance targets during the contract period. In these cases, the Regional Energy Coordinator should be consulted regarding possible target revision. Input from the Contractor should also be obtained, but the adjustments to the targets should be done with the concurrence of the Regional Energy Coordinator.]

These energy and water performance targets are to be accomplished simultaneously to GSA's overall quality workplace/tenant satisfaction goals.

## Energy Performance Targets

The energy performance target for this building, which is the sum of all building energy uses (electricity, natural gas, purchased steam/high temperature hot water, purchased chilled water, fuel oil, and any other purchased or site-generated energy) used in the 12-month contract period, has been established to support regional objectives in meeting Federal mandates. The energy usage index (EUI) measured in Btu/GSF (British thermal units/gross square foot) is the standard unit of measurement for tracking energy consumption. The GSA Regional Energy Coordinator has been consulted to determine the most practical and achievable energy performance target for this building.

The annual energy performance target for the building identified above is \_\_\_\_\_ [Insert target in Btu/GSF as recommended by the Regional Energy Coordinator] Btu/GSF as measured by the \_\_\_\_\_ [insert EUAS utility bill data OR ION enterprise energy management system (EEM) data as appropriate]. Historical building energy use intensity data for the most recent 3 years [change to "5 years" if data are included in the appendix] are included in Appendix A (Building Energy Use History). This historical data is intended to provide a relative measure of the building's current energy usage and overall annual usage trends.

Contractor energy efficiency performance will be monitored through the monthly progress reports (see section C.11, Monthly Progress Reports), monthly tracking against the Contractor-developed Building Energy and Water Efficiency Use Plan (see section C.21.6, Energy and Water Efficiency), and evaluated over the full 12-month contract term to determine success in meeting the building energy performance target. GSA recognizes that there are factors/events that will impact the overall measured building energy performance, that many of these factors/events are outside the Contractor's control, and that there may be resulting impacts, both negative and positive. These factors/events will be considered by GSA in evaluating the Contractor's energy efficiency performance. It is the Contractor's responsibility to provide timely data analysis, and summaries of findings and recommendations to GSA for issues that impact the building's energy performance. [This paragraph defines an ongoing process of energy management review by GSA and the Contractor, while also reinforcing the monthly progress reporting requirements and the value of the Building Energy and Water Efficiency Plan.]

## Water Performance Targets

The annual water performance target for this building has been established to support regional objectives in meeting Federal mandates for potable water use. The water usage index measured in gal/GSF (gallons/gross square foot) is the standard unit of measurement for tracking water consumption. (Note that the gross square footage used for both the energy and water usage indexes are the same.) The GSA Regional Energy Coordinator has evaluated the water usage data to determine the most practical and achievable target to meet the annual regional targets.

The annual water performance target for the building identified above is \_\_\_\_\_ [Insert target in gal/GSF as recommended by the Regional Energy Coordinator] gal/GSF as measured by the \_\_\_\_\_ [insert EUAS utility bill data OR EEM data as appropriate]. Historical building water use intensity data for the most recent 3 years [change to "5 years" if data are included in the appendix] are included in Appendix B (Building Water Use History). This historical data is intended to provide a relative measure of the building's current water usage and overall annual usage trends.

Contractor water efficiency performance will be monitored through the monthly progress reports (see section C.11, Monthly Progress Reports), monthly tracking against the Contractor-developed Building Energy and Water Efficiency Plan (see section C.21.6, Energy and Water Efficiency), and evaluated over the full 12-month contract term to determine success in meeting the building water performance target. GSA recognizes that there are factors/events that will impact the

overall measured building water performance, that many of these factors/events are outside the Contractor's control, and that there may be resulting impacts, both negative and positive. These factors/events will be considered by GSA in evaluating the Contractor's energy efficiency performance. It is the Contractor's responsibility to provide timely water usage data, data analysis, and summaries of findings and recommendations to GSA for issues that impact the building's water performance. [\[This paragraph defines an ongoing process of energy management review by GSA and the Contractor, while also reinforcing the monthly progress reporting requirements and the value of the Building Energy and Water Efficiency Plan.\]](#)



# APPENDIX A – BUILDING ENERGY USE HISTORY

[Complete the table below using information as reported from the EUAS or EEM. There may be cases where it is desired to include data from months that have not yet been reported by the EUAS. In these cases, use care to make sure all energy source units is correctly converted to Btus, and that all building energy sources normally included in the EUAS reports are correctly totaled.]

**Table A-1. Building Energy Use Intensity History**

	Reporting Period <a href="#">[see note 1 below]</a>					
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Contract Period <a href="#">[Insert dates]</a>
<b>Total Building Energy Use Intensity (BTU/GSF)</b>	<a href="#">[Optional]</a>	<a href="#">[Optional]</a>	<a href="#">[Required]</a>	<a href="#">[Required]</a>	<a href="#">[Required]</a>	<a href="#">[Required]</a>

[Notes:

1. Current columns (i.e. FY 2009) should be changed as needed to coincide with consecutive rolling 12-month periods other than fiscal years (October 1 through September 30) at the discretion of the Regional Energy Manager and/or the Property Manager. Cases where the most recent 12 month period may be preferred over using fiscal year data are those where a significant change in the building operations affecting the building energy use such as major tenant changes, equipment changes, or operating requirement changes result.
2. Consider including additional narrative information to the table shown by adding details or descriptions as notes (such as this), especially if large year-to-year changes occur in the reported annual energy use and the changes can be attributed (with confidence) to factors such as weather extremes, changes in tenant needs, major equipment change-outs, installation of efficiency measures, or other appropriate factors.]

## APPENDIX B – BUILDING WATER USE HISTORY

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[Complete the table below using information as reported from the EUAS or EEM. There may be cases where it is desired to include data from months that have not yet been reported by the EUAS. In these cases, use care to make sure metered water units is consistent and correct.]

**Table B-1. Building Water Use Intensity History**

	Reporting Period <a href="#">[see note 1 below]</a>					
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Contract Period <a href="#">[Insert dates]</a>
<b>Building Water Use Intensity (GAL/GSF)</b>	<a href="#">[Optional]</a>	<a href="#">[Optional]</a>	<a href="#">[Required]</a>	<a href="#">[Required]</a>	<a href="#">[Required]</a>	<a href="#">[Required]</a>

[Notes:

1. Current columns (i.e. FY 2009) should be changed as needed to coincide with consecutive rolling 12-month periods other than fiscal years (October 1 through September 30) at the discretion of the Regional Energy Manager and/or the property manager. Cases where the most recent 12-month period may be preferred over using fiscal year data are those where a significant change in the building operations affecting the building water use, such as major tenant changes, equipment changes, or operating requirement changes.
  2. Consider including additional narrative information to the table shown by adding details or descriptions as notes (such as this), especially if large year-to-year changes occur in the reported annual energy use and the changes can be attributed (with confidence) to factors such as weather extremes, changes in tenant needs, major equipment change-outs, installation of efficiency measures, or other appropriate factors.]
-

# EXHIBIT 11

## J.11. Energy & Water Efficiency Use Plan

*[[[This section defines an ongoing process of energy management review by GSA and the Contractor, by encouraging partnership with the Contractor to develop realistic and obtainable strategies to reduce the buildings utility usage and pursue energy reduction initiatives while reinforcing the monthly progress reporting requirements. This template should be completed by the contractor involved in either the Startup Phase or Transition Phase Startup per section C.5]]].*

BACKGROUND: The Energy Independence and Security Act of 2007 (Public Law 110-140) requires Federal agencies to improve energy efficiency by 30% by end of FY 2015 as compared to the 2003 baseline (while targeting an annual reduction in energy use of roughly 3%). Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance mandates Federal agencies reduce potable water use intensity relative to their 2007 baseline by 26% total reduction by FY2020 (while targeting an annual reduction in water use of roughly 2% annually).

The report on energy and water efficiency use plan will be completed per the requirements of Section C.21.6, Energy & Water Efficiency, of the O&M services Contract. The Contractor will complete and submit to the Property Manager the reporting template at the beginning of the contract using information from the Annual Energy and Water Efficiency Report as available see Exhibit 13). The Property Manager will review the Contractor's annual report and meet with the Contractor to review proposed actions for the upcoming year and prioritize actions for the next Contract year that will further advance energy and water efficiency in the building. GSA recognizes that there are factors/events that will impact the overall measured building energy performance, that many of these factors/events are outside the Contractor's control, and that there may be resulting impacts, both negative and positive. These factors/events will be considered by GSA in evaluating the Contractor's energy efficiency performance plan.

DATA SOURCES: Contractor shall make use of the previous contract years' energy and water efficiency monthly and annual reports and the Energy & Water Operational Performance Targets for the development of the use plan.

PURPOSE: The purpose of this document is to clearly identify yearly building-specific energy and water reduction measures recommended by the contractor. These recommendations will establish a plan of action for the contract year and be sanctioned by GSA in consultation with the Regional Energy Coordinator. This plan will identify how the energy and water reduction measure will be pursued each month which will be monitored through the monthly progress reporting requirements of sections, C.21.6 and C.11.

MINIMUM REPORTING ELEMENTS: Minimum reporting elements are provided below:

1. Summary of annual use by resource –target 12 month use and comparison against previous 12 month period.
  - a. Significant energy and water efficiency actions/measures completed in the last year that should be considered for the new contract year.

2. Additional recommendations for improvement in the next Contract year – with consideration to the following
  - a. Changes to operations practices such as
    - i. Equipment and/or building scheduling
    - ii. Set points
    - iii. Trend report assessments
  - b. Plant or equipment changes for
    - i. Low-cost/site funded measures
    - ii. Project funding
  - c. Contractor/Property Manager coordination and communication
3. Identify support actions needed from GSA to assist in the energy and water efficiency efforts.

## Attachment 1 – Energy and Water Efficiency Use Plan Template

CONTRACT INFORMATION – to be completed by Contractor in fields provided

Contract number:

Building number, name and address:

Building annual energy performance target:  Btu/GSF

Building annual water performance target:  Gal/GSF

Dates covered in this report:

Report submitted by (name of Contractor, name of individual responsible for follow-up actions):

Date submitted:

CONTRACTOR REPORTING ELEMENTS – to be completed by Contractor in fields provided

1. Use by resource – For each purchased utility resource, provide the use for the most recent EUAS reporting period for each utility, and the corresponding reporting period from the previous year in the table below.

Resource (please note units)	Billing Period (enter dates for the most recent EUAS billing for the corresponding utility)	Yearly Use Previous Contract Year	Target Use Current Contract Year
Electricity (kWh)			
Water (kgal)			
Steam (mmBtu)			
Natural gas (CCF)			
Total Energy (KBtu)			

4. Significant energy and water efficiency actions/measures completed in the last year that should be considered for the current year.

- b. Identify previous overtime utility requests and verify current year request
- c. request

5. Additional recommendations for improvement in the next Contract year – with consideration to the following
  - a. Changes to operations practices such as
    - i. Equipment and/or buildings scheduling
    - ii. Set points
    - iii. Trend report assessments
  - b. Plant or equipment changes for
    - i. Low-cost/site funded measures
    - ii. Project funding
  - c. Contractor/Property Manager coordination and communication
6. Identify support actions needed from GSA to assist in the energy and water efficiency efforts.

GSA REVIEW AND RESPONSE ELEMENTS – to be completed by property manager in the fields provided

GSA1. GSA reviewing official:

GSA2. Date reviewed by GSA:

GSA3. Comments to Contractor:

# **EXHIBIT 12**

## **J.12. Energy and Water Efficiency Monthly Report**

**BACKGROUND:** This energy and water efficiency report is to be completed per the requirements of section C.21.6, Energy & Water Efficiency, of the O&M services contract. The Contractor shall use this report template and submit completed reports as part of the monthly report to the Property Manager.

The primary objectives of this report are twofold. First, to encourage the Contractor to regularly review and manage their efficiency efforts towards achieving the performance targets established in Energy & Water Operational Performance Targets, and to optimize building performance. Second, to provide information that generates regular discussion with the Property Manager on the energy and water efficiency efforts. Together these objectives will help the Contractor and Property Manager work in a collaborative manner to improve the operational efficiency of the building by addressing current and emerging issues, and developing mid- and long-term plans that will optimize building and Contractor performance. Examples of potential collaborative outcomes include identification of roles and actions for GSA to engage tenants in, such as reducing overtime utility requests, reduction of off-hour plug loads, or even purchase and installation of equipment sized to efficiently meet the off-hour loads; identification of operational changes that can reduce energy and water use while still meeting tenant requirements such as temperature set points and equipment on/off schedules; and identification of potential prospectus-level projects. These types of actions will ultimately benefit the Contractor performance by meeting or exceeding energy and water use targets. GSA will benefit by reducing utility costs, achieving agency energy and water efficiency goals, and overall improvement in building performance including system reliability and occupant comfort. Building tenants will benefit from improved building comfort, systems reliability, and reduction in the overall cost to lease space.

Note that information provided in the report will be used to support the annual building energy and water efficiency report.

This document includes the following three attachments:

- **Attachment 1 – Energy and Water Efficiency Reporting Template.** The Contractor shall use this template to complete the energy and water efficiency report sections for “Contract Information” and “Contractor Reporting Elements.” The GSA Property Manager shall complete the section “GSA Review and Response Elements.”
- **Attachment 2 – Clarification for Completing Energy and Water Efficiency Report.** This attachment provides additional detail on the types of information to be included in the individual reporting elements found in the template.
- **Attachment 3 – Example Energy and Water Efficiency Report.** This attachment is included to show users’ what a completed report can look like.

**INSTRUCTIONS:** The Contractor shall complete the required fields in this report (see Attachment 1, Energy and Water Efficiency Reporting Template) and forward the completed report to the Property Manager by the 5<sup>th</sup> working day of the subsequent month. The Property Manager shall review the

submitted report; meet with the Contractor to discuss identified issues, findings, and recommendations; complete the report fields in the section “GSA Response;” and provide a copy of the GSA response to the Contractor. Attachment 2, Clarification for Completing Energy and Water Efficiency Report, provides the additional detail and clarifications to assist in completing the report template.

CONTRACT INFORMATION – to be completed by Contractor in the fields provided

Contract number: Field for Contractor provided in template

Building number, name and address: Field for Contractor provided in template

Building annual energy performance target: Field for Contractor provided in template

Building annual water performance target: Field for Contractor provided in template

Dates covered in this report: Field for Contractor provided in template

Report submitted by (name of contractor, name of individual responsible for follow-up actions): Field for Contractor provided in template

Date submitted: Field for Contractor provided in template



CONTRACTOR REPORTING ELEMENTS – to be completed by Contractor in the fields provided.

1. Monthly resource use – For each purchased utility resource, provide the use for the most recent EUAS reporting period for each utility, and the corresponding reporting period from the previous year in the table below. Field for Contractor below.

Resource (please note units) <sup>a</sup>	Billing Period (enter dates for the most recent EUAS billing for the corresponding utility)	Monthly Use - Current Year	Monthly Use - Previous Year
Electricity (kWh) <sup>b</sup>			
Electric demand (kW)			
Water (gal) <sup>c</sup>			
Steam (mmBtu) <sup>d</sup>			
Natural gas (CCF) <sup>e</sup>			
<p>Notes:</p> <p><sup>a</sup> Units listed in this table are standard units. Should different units be reported, the Contractor shall clearly label the units being used. The same units shall be used for both the current and previous year values reported.</p> <p><sup>b</sup> Electricity shall be reported in kWh, the standard units of electric energy. The standard conversion for kWh to Btu is 3,413 Btu per 1 kWh.</p> <p><sup>c</sup> Water is typically billed in thousands of gallons (kgal). However, water should be reported in gallons (gal) on this form.</p> <p><sup>d</sup> Steam usage is typically reported in millions of Btus (mmBtu). Other units must be approved by the Property Manager.</p> <p><sup>e</sup> Natural gas can be metered/reported in hundreds of cubic feet (CCF). The standard conversion for CCF to Btu is 1,028 Btu per CCF.</p>			

2. Verification of building operations practices per the building operating plan – for each element below, verify if the operations practices are being followed, and list the date(s) these practices were verified.
  - a. Operating schedule for HVAC systems – address all systems that apply: Field for Contractor provided in template
  - b. Operating schedule for interior lighting systems – address all systems that apply: Field for Contractor provided in template
  - c. Operating schedule for exterior lighting systems: Field for Contractor provided in template
  - d. Summarize overtime utility requests and verify control settings were returned to original/desired setting: Field for Contractor provided in template
  - e. Summarize building space temperatures at locations and times established by the Building Manager: Field for Contractor provided in template

3. Analysis or completion of physical changes to plant and/or equipment resulting in reduced energy and/or water use. Field for Contractor provided in template
4. Operations changes resulting in reduced or increased energy and/or water use. Field for Contractor provided in template
5. Identify issues and their potential impact on the building's energy and/or water performance. Field for Contractor provided in template
6. Overall energy and water use performance trend assessment. Field for Contractor provided in template
7. Planned energy and water efficiency actions for the next reporting period. Field for Contractor provided in template
8. Identify support actions needed from GSA to assist in the energy and water efficiency efforts. Field for Contractor provided in template

GSA REVIEW AND RESPONSE ELEMENTS – to be completed by Property Manager in the fields provided

GSA1. GSA reviewing official: Field for Property Manager provided in template

GSA2. Date reviewed by GSA: Field for Property Manager provided in template

GSA3. Comments to Contractor: Field for GSA provided in template

## Attachment 1 – Energy and Water Efficiency Reporting Template

CONTRACT INFORMATION – to be completed by Contractor in fields provided

Contract number:

Building number, name and address:

Building annual energy performance target: Btu/GSF

Building annual water performance target: Gal/GSF

Dates covered in this report:

Report submitted by (name of contractor, name of individual responsible for follow-up actions):

Date submitted:

CONTRACTOR REPORTING ELEMENTS – to be completed by Contractor in fields provided.

1. Monthly resource use – For each purchased utility resource, provide the use for the most recent EUAS reporting period for each utility, and the corresponding reporting period from the previous year in the table below.

Resource (please note units) <sup>a</sup>	Billing Period (enter dates for the most recent EUAS billing for the corresponding utility)	Monthly Use - Current Year	Monthly Use - Previous Year
Electricity (kWh) <sup>b</sup>			
Electric demand (kW)			
Water (gal) <sup>c</sup>			
Steam (mmBtu) <sup>d</sup>			
Natural gas (CCF) <sup>e</sup>			
<p>Notes:</p> <p><sup>a</sup> Units listed in this table are standard units. Should different units be reported, the Contractor shall clearly label the units being used. The same units shall be used for both the current and previous year values reported.</p> <p><sup>b</sup> Electricity shall be reported in kWh, the standard units of electric energy. The standard conversion for kWh to Btu is 3,413 Btu per 1 kWh.</p> <p><sup>c</sup> Water is typically billed in thousands of gallons (kgal). However, water should be reported in gallons (gal) on this form.</p> <p><sup>d</sup> Steam usage is typically reported in millions of Btus (mmBtu). Other units must be approved by the Property Manager.</p>			

<sup>e</sup> Natural gas can be metered/reported in hundreds of cubic feet (CCF). The standard conversion for CCF to Btu is 1,028 Btu per CCF.

2. Verification of building operations practices per the building operating plan – for each element below, verify if the operations practices are being followed, and list the date(s) these practices were verified.

- a. Operating schedule for HVAC systems

Completed: Yes ☐ No ☐ Date

- b. Operating schedule for interior lighting systems

Completed: Yes ☐ No ☐ Date

- c. Operating schedule for exterior lighting systems

Completed: Yes ☐ No ☐ Date

- d. Summarize overtime utility requests and verify control settings were returned to original/desired setting.

Summary:

Timely controls settings return completed: Yes ☐ No ☐

- e. Summarize building space temperatures at locations and times established by the Property Manager.

Summary:

3. Analysis or completion of physical changes to plant and/or equipment resulting in reduced energy and/or water use.

Summary:

4. Operations changes resulting in reduced or increased energy and/or water use.

Summary:

5. Identify issues and their potential impact on the building's energy and/or water performance.

Summary:

6. Overall energy and water use performance trend assessment.

Summary:

7. Planned energy and water efficiency actions for the next reporting period.

Summary:

8. Identify support actions needed from GSA to assist in the energy and water efficiency efforts.

Summary:

GSA REVIEW AND RESPONSE ELEMENTS – to be completed by Property Manager in the fields provided

GSA1. GSA Reviewing Official:

GSA2. Date reviewed by GSA:

GSA3. Comments to Contractor:

Summary:

## Attachment 2 – Clarification for Completing Monthly Energy and Water Efficiency Report

This attachment provides clarification on the types of information requested in the Monthly Energy and Water Efficiency Report. Entries in this clarification correspond to the numbered elements in the report template.

### CONTRACTOR REPORTING ELEMENTS

- 1 Monthly resource use (i.e., electricity, natural gas, etc.) – complete the table in the reporting template by providing the most recent monthly usage information available from the EUAS. Note that in cases where the building is connected to the GSA ION EES, the Property Manager and Contractor may agree to use this data instead. (The advantage of the EES data is that the data is available in real-time while the EUAS data are at least 1 month old before they are available.) Contractors must make sure that the use data is entered in the correct units and that these units are either the default units used in the template or they are clearly called out in the table.
- 2 Verification of building operations practices per the building operating plan – for each element below, verify if the operations practices are followed, and list the date(s) these practices were verified.
  - a. Operating schedule for HVAC systems – address all systems that apply. This reporting element intends to address the major HVAC systems. Consult with the Property Manager if clarification is needed to identify the major HVAC systems. Provide verification that each of the identified major HVAC systems is operated in accordance with the building operating plan. Identify exceptions and their causes.
  - b. Operating schedule for interior lighting systems – address all systems that apply. This reporting element intends to address the major interior lighting systems. Consult with the Property Manager if clarification is needed to identify the major indoor lighting systems. Provide verification that each of the identified major lighting systems are operated in accordance with the building operating plan. Identify exceptions and their causes.
  - c. Operating schedule for exterior lighting systems. Provide verification that each of the exterior lighting systems is operated in accordance with the building operating plan. Identify exceptions and their causes.
  - d. Summarize overtime utility requests and verify control settings were returned to original/desired settings. This reporting element intends to verify that the building energy using systems used to accommodate overtime requests are returned to their original settings at the expiration of the overtime utility request. All requests for overtime utilities should be included in this summary; each summary entry should include the date the control settings were returned to their original/desired settings. “Long-term” overtime requests should be identified in the reporting under element 5 below.
  - e. Summarize average building/space temperatures in the following locations – the Property Manager shall provide to the Contractor a list of locations for temperature monitoring along with instructions for frequency of monitoring. Because temperature monitoring can be helpful in identifying HVAC systems that are not shutting-down or starting-up as appropriate for

the building operating schedule, temperature monitoring is encouraged during occupied and unoccupied hours. Note also that space temperatures are also used to evaluate overall HVAC system operations and correct temperature set points.

- 3 Analysis or completion of physical changes to plant or equipment resulting in reduced energy and/or water use. Examples for inclusion are listed below.
  - Assess/verify need for equipment replacement – section C.13 (Equipment Condition Assessment) of the O&M services contract states “the Contractor shall complete and submit to the CO or designee an itemized equipment condition assessment with their recommendation for equipment or system upgrades or replacements (that have reached the end of their life-cycle) ...” Energy and water efficiency opportunities identified in the condition system assessment should also be listed in this report.
  - Use of Energy Star® and FEMP covered products
  - Size replacement products and/or identification of different technology approaches to accomplish the same objective
- 4 Operational change resulting in reduced or increased energy and/or water use. Examples are listed below. Note cases where changes were made at the request of the building occupants/tenants (please identify if possible).
  - Revise equipment control procedures
  - Reduce equipment runtime
  - Optimize chilled water supply temperature and differential temperature reset
  - Optimize static pressure set point
  - Delamp overlit areas such as corridors and offices
- 5 Identify issues and their potential impact on the building’s energy and/or water performance. Examples include
  - Increase/decrease in overtime utility requests – because overtime utility use represents a significant additional operational cost, GSA would like to better understand what the building and tenant needs are, and identify potential options to reduce these cost impacts. For example, in some cases the installation of a local/small packaged air conditioning unit to satisfy overtime tenant needs can be considered as an alternative to operating the central plant chiller at a very low load. The Contractor is encouraged to look at and propose potential solutions to the Property Manager. Also, monitoring overtime utility requests can serve as a reminder to operating staff to verify that system overrides put in place to accommodate the overtime request need to be returned to their correct normal setting immediately after the request has been fulfilled.
  - Extreme weather – very hot, very cold, weather closures, or unseasonably mild
  - Major equipment/systems failures
  - Tenant move-out (decreased occupancy) or move-in (increased occupancy)
  - New building loads from tenants – data centers added/increased, high intensity equipment, etc.
- 6 Overall performance trend assessment. Review the events/actions throughout the reporting period and provide an assessment of the overall energy and water performance. This assessment should make use of the EUAS and ION EEM data as available and appropriate.
- 7 Planned and/or proposed energy and water efficiency actions for the next reporting period. Identify planned actions, such as those listed as examples above that are anticipated to take place during the next reporting period and, as available, provide supporting information on the potential impacts. Note that agreement/approval from the Property Manager should be obtained prior to proceeding with changes.

- 8 Identify actions required from GSA to assist in the energy and water efficiency efforts. Examples of such actions may include reviewing and/or responding to Contractor submitted requests for action or information such as equipment information, occupant needs, or energy or water use information for previous reporting periods.

#### GSA REVIEW AND RESPONSE ELEMENTS

GSA1. GSA Reviewing Official

GSA2. Date reviewed by GSA

GSA3. Comments to Contractor. The Property Manager is to review each monthly report to identify areas of progress, concerns, and need (e.g. specific information or support requests from the Contractor). This review should also address the planned and/or proposed actions submitted by the Contractor, as well as the listed actions required from GSA (see Contractor Reporting Elements 7 and 8 above). The Property Manager should meet with the Contractor each month to discuss these areas of progress, concern, and need. Before meeting with the Contractor, the Property Manager may seek additional technical support within GSA regarding issues of concern, and include these experts in the dialogue with the Contractor if thought to be beneficial. *Please remember* the objective of these monthly report reviews and meetings is to promote an ongoing dialogue between the Contractor and GSA to enable proactive problem solving and avoid end-of-the-year problems in assessing the Contractor's performance.

It is recommended that the Property Manager share this information with the Regional Energy Coordinator in a joint effort to collaborate on strategic planning. It is also recommended that the GSA reviewing official include in the monthly report review a summary of the rolling 12-month building performance data as generated by the EUAS (see sample below). Trends of concern against this rolling performance should be called to the attention of the Contractor.

Sample Rolling 12 month report below



### Sample Data Report - Energy

**Building Summary for building categories : ALL**

**Optional Building Designation(s) :**

**Energy Usage is shown in Actual units - Show All Report Details**

**Conversion Detail = Site Use**

**Date : 12/11/2012**      Report for the period of Floating 12 Months, Fiscal Year : 2012 Month : June  
**Time : 7:50:21 AM**

Region : 06		Building Category : A		Building : MO0050ZZ			
Building Name : WHITTAKER COURTHOUSE 5101-KANSAS CITY NORTH PMC		City : KANSAS CITY					
Field Office : Service Center : 1		State : Missouri					
		GSF : 753,511					
			Electricity (KWH)	Demand (KW)		Steam (Thou. lbs)	
Jul	Usage	1,004,654	A	2,212	A	553	A
	Cost	\$78,335	N	\$21,850	A	\$15,523	N
Aug	Usage	899,797	A	2,145	A	1,354	A
	Cost	\$81,254	N	\$22,087	A	\$20,963	N
Sep	Usage	670,256	A	1,745	A	762	A
	Cost	\$56,879	N	\$13,472	A	\$16,943	N

Oct	Usage	569,927	A	1,658	A	1,183	A
	Cost	\$49,789	N	\$11,604	A	\$19,802	N
Nov	Usage	644,465	N	1,669	A	1,219	A
	Cost	\$52,526	N	\$11,681	A	\$22,497	N
Dec	Usage	588,543	A	1,370	A	1,893	A
	Cost	\$46,000	N	\$9,589	A	\$28,430	N
Jan	Usage	578,578	A	1,404	A	2,020	A
	Cost	\$46,280	N	\$9,827	A	\$29,548	N
Feb	Usage	636,912	N	1,955	A	1,981	A
	Cost	\$55,926	N	\$13,683	A	\$29,204	N
Mar	Usage	675,916	A	1,935	A	1,063	A
	Cost	\$57,115	N	\$13,543	A	\$21,124	N
Apr	Usage	640,644	N	1,975	A	862	A
	Cost	\$55,977	N	\$13,823	A	\$19,355	N
May	Usage	720,322	A	2,013	A	606	A
	Cost	\$70,375	N	\$19,483	A	\$17,101	N
Jun	Usage	967,002	N	2,010	A	918	A
	Cost	\$79,609	N	\$20,697	A	\$19,848	N

Total	Usage	8,597,016	22,091	14,414
	Cost	\$730,065	\$181,339	\$260,338

\* Demand KW and cost are information items only; demand cost is also included in KWH cost.

\* RenElec, RenGas are information items only; RenElec, RenGas usage and cost are also included in electricity and gas usage and cost respectively.

**Sensitive But Unclassified, Intended for GSA Internal Use Only.**

Actual Data Report - Energy

**Building Summary for building categories : ALL**  
**Optional Building Designation(s) :**  
**Energy Usage is shown in Actual units - Show All Report Details**  
**Conversion Detail = Site Use**

**Date : 12/11/2012**      Report for the period of Floating 12 Months, Fiscal Year : 2012 Month : June  
**Time : 7:50:21 AM**

Region :	06	Building Category :	Building :
Building Name :	WHITTAKER COURTHOUSE	A	MO0050ZZ
	5101-KANSAS CITY NORTH PMC	City :	KANSAS
Field Office :		State :	CITY
Service Center :	1		Missouri
		GSF :	753,511

Month	Remarks
Jul	
Aug	
Sep	
Oct	enter demand

Nov	
Dec	
Jan	
Feb	
Mar	
Apr	
May	
Jun	

**Sensitive But Unclassified, Intended for GSA Internal Use Only.**

## Attachment 3 – Example

### Energy and Water Efficiency Report – Contractor Input

Note to users: This sample report is based on the Energy and Water Efficiency Reporting Template. There are minor variances between this example and the template. These minor variances are acceptable provided all the information requested in the template is provided.

## Energy and Water Efficiency Monthly Reporting Sample

CONTRACT INFORMATION: \_\_\_\_\_

Contract number: \_\_\_\_\_

Building number, name and address: Denney Federal Bldg  
100 Centennial Mall North  
Lincoln, NE 68508

FY12 Building energy performance target: 60,923 Btu/GSF,  
Actual rolling 12 months EUI as of August 2012, 56,434 Btu/GSF.

FY12 Building annual water performance target: 14.61 Gal/GSF,  
Actual rolling 12 months water use as of August 2012, 12.41 Gal/GSF

Dates covered in this report: August 2012

Report submitted by: Joe Jones, O&M Contract Supervisor

Date submitted: September 7, 2012

### CONTRACTOR REPORTING ELEMENTS:

2. Use by resource – For each purchased utility resource, provide the use for the most recent EUAS reporting period for each utility, and the corresponding reporting period from the previous year in the table below.

Resource (please note units)	Billing Period (enter dates for the most recent EUAS billing for the corresponding utility)	Monthly Use Current Year	Monthly Use Previous Year
Electricity (kWh)	<u>August 2012</u>	<u>435,000</u>	<u>503,000</u>
Electricity Demand (kW)	<u>August 2012</u>	<u>1,326</u>	<u>1,674</u>
Water (gal)	<u>August 2012</u>	<u>698,632</u>	<u>996,336</u>
Steam (mmBtu)	<u>August 2012</u>	<u>NA</u>	<u>NA</u>
Natural gas (CF)	<u>August 2012</u>	<u>0</u>	<u>0</u>

3. Verification of building operations practices per the building operating plan – for each element below, verify if the operations practices are being followed, and list the date(s) these practices were verified.

The following were all reviewed in our meeting of October 24.

- d. Operating schedule for HVAC systems

Completed: Yes ☐ No ☐ Date 10/24/12

- e. Operating schedule for interior lighting systems

Completed: Yes ☐ No ☐ Date

- f. Operating schedule for exterior lighting systems

Completed: Yes ☐ No ☐ Date

Will re-verify operating schedules of all exterior lighting when daylight savings time goes into effect on Nov 4

- g. Summarize overtime utility requests and verify control settings were returned to original/desired setting:

Standing overtime utilities scheduled for the USDA Lab – 24/7 – AHU-6. No other overtime utilities were requested this month. SSA will have overtime utilities starting in the second quarter for their annual busy season. Typical OT utility hours are extended 2 hours per day Monday through Friday and 6 hours on Saturday until April 30, 2013.

---

Timely controls settings return completed: Yes ☐ No ☐ applicable

- h. Summarize building space temperatures at locations and times established by the Building Manager:

As discussed, the winter set point will be 72 +/- 2F. All areas will be set to this temperature per GSA Building Manager.

4. Analysis or completion of physical changes to plant and/or equipment resulting in reduced energy and/or water use. Use attachment if additional space is needed.

The VFDs on the chilled water and condenser water pumps are showing erratic operation. The control PID loop for these pumps is being investigated as the cause of this condition. The BAS vendor controls tech. is assisting in the analysis and reprogramming to correct this issue.

---

5. Operations changes resulting in reduced or increased energy and/or water use. Use attachment if additional space is needed.

During the dry weather and drought conditions this month, the landscaping on mall side of the building required increased watering to as much as 3 times per week. As rainfall increases, this practice will be monitored

closely to avoid over using water for irrigation purposes.

---

6. Identify issues and their potential impact on the building's energy and/or water performance. Use attachment of additional space is needed.

During the dry weather and drought conditions this month, the cooling tower make-up water has increased. Even though water use is down substantially for the rolling 12 month period, we estimate the tower is requiring more water for the month due to increased evaporation and additional runtime during the extreme high temperatures this past month.

---

7. Overall energy and water use performance trend assessment.

Overall, the rolling 12 month energy use has decreased by -10.15% as of August 2012, compared to same 12 month period last year. Completion of ARRA projects along with adjustments of runtime schedules for air-handling units and some vacant space in the building has helped to reduce electrical energy consumption. Water usage is also down by 16.77% due to new cooling towers and new control sequences for the chilled water system. We will continue to adjust the AHU runtimes to match occupancy changes to reduce the operation of the chiller plant and to reduce electrical demand.

---

Planned energy and water efficiency actions for the next reporting period.

We will continue to closely monitor increased irrigation required due to drought conditions, and closely monitor that chilled water reset controls are working to take advantage of meeting cooling needs with lowered chilled water supply temperatures going into the shoulder season.

---

8. Identify support actions needed from GSA to assist in the energy and water efficiency efforts.

As discussed, GSA Building Manager is planning to meet with tenants to discuss the approved temperature ranges for office spaces to get a better understanding of the temperature range that is acceptable for all area. This should help to reduce hot/cold calls and repeat calls in many areas.

AHU-4 continues to have operational challenges. The unit is required to run for longer hours each day to ensure that cool down is achieved when the tenants return in the morning. VAV box air flows and temperatures in



the area have been overridden to make the area as comfortable as possible. We believe this unit is not sized correctly for the area it serves and needs to be studied for refurbishment or replacement in a future capital project.

---

GSA REVIEW AND RESPONSE ELEMENTS – to be completed by property manager in the fields provided

GSA1. GSA Reviewing Official: \_\_\_\_\_

GSA2. Date reviewed by GSA: \_\_\_\_\_

GSA3. Comments to Contractor: \_\_\_\_\_

# EXHIBIT 13

## J.13. Annual Energy & Water Efficiency Report

**BACKGROUND:** The annual report on energy and water efficiency will be completed and submitted per the requirements of section C.21.6, Energy & Water Efficiency, of the O&M services contract. The Contractor will meet with the GSA Property Manager prior to the last week of the contract expiration when the contract is not being extended, or by the 5<sup>th</sup> working day of the subsequent year startup when the contract is being extended, to review and discuss the submitted report. This discussion will address past building performance and initiate the planning of energy and water efficiency efforts for the next contract year. This information will assist the property manager and regional energy coordinator in establishing energy targets in the Operational Performance Targets (see Exhibit 10) for energy and water for the next fiscal year.

GSA is adopting this annual reporting procedure as a way to promote a collaborative relationship between GSA and the Contractor. This collaborative relationship will work to better identify and address issues and opportunities for improved energy and water efficiency, as well as overall building operations. This annual report will

- summarize actions completed during the last contract year aimed at
- energy and water efficiency, and assess relative degree of success and lessons learned;
- set operational goals for the next contract year; and
- identify and prioritize projects for the next contract year.

This document includes the following attachments:

- Attachment 1 – Annual Report on Energy and Water Efficiency Template. The Contractor shall use the template to complete the report template sections for “Contract Information” and “Contractor Reporting Elements.” The GSA Property Manager shall complete the section “GSA Review and Response Elements.”
- Attachment 2 – Clarification for Completing the Annual Report on Energy and Water Efficiency. This attachment provides additional detail on the types of information to be included in the individual reporting elements found in the template.

**DATA SOURCES:** Contractor shall make use of the energy and water efficiency reports that were submitted each month throughout the contract period. Contractor shall also use the most recent 12 month EUAS` data available for each individual resource and for total building resource use.

**INSTRUCTIONS:** The incumbent Contractor shall complete the required fields in this report (see Attachment 1, Annual Report on Energy and Water Efficiency Reporting Template) and forward the completed report to the Property Manager prior to the last week of the contract expiration. (Note that in cases where a new Contractor is starting-up, they are not required to complete this report as part of their start-up.) The Property Manager shall review the submitted report; meet with the Contractor to discuss the summary of actions and outcomes reported; develop building performance targets for the new contract period; and prioritize projects, actions, and activities that will lead to energy and water efficiency

improvements for the new contract period. Attachment 2, Clarification for Completing the Annual Report on Energy and Water Efficiency, provides additional detail and clarifications to assist in completing the report template.

A new Contractor starting-up work is not required to complete and submit this annual report until the last week of the contract period. However, the new Contractor shall review the last annual report submitted by the previous Contractor and complete the reporting element 7 and consider results/recommendations for development of the Energy and Water Use Plan for the next contract year and submit to the CO or their designee within the first 2 weeks of the new contract. The Contractor will then meet with the Property Manager to agree upon the first year energy and water efficiency use plan.

**CONTRACT INFORMATION** – to be completed by Contractor in fields provided

Contract number: Field for Contractor provided in template

Building number, name and address: Field for Contractor provided in template

Building annual energy performance target: Field for Contractor provided in template

Building annual water performance target: Field for Contractor provided in template

Dates covered in this report: Field for Contractor provided in template

Report submitted by (name of contractor, name of individual responsible for follow-up actions): Field for Contractor provided in template

Date submitted: Field for Contractor provided in template

**ANNUAL REPORTING ELEMENTS** – to be completed by the Contractor in fields provided. Additional guidance on completing these reporting elements is provided in Attachment 2 (Clarification for Completing the Annual Report on Energy and Water Efficiency)

1. **Summary of annual use by resource** – For each purchased utility resource, provide the total annual use for the last 12 months available from the EUAS. Field for Contractor, as shown below is provided in template.

Resource (please note units) <sup>a</sup>	Billing Period (enter dates for the most recent 12 month EUAS billing for the corresponding utility)	Yearly Use Current Year	Yearly Use Previous Year
Electricity (kWh) <sup>b</sup>			
Electric demand (kW)			
Water (gal) <sup>c</sup>			
Steam (mmBtu) <sup>d</sup>			
Natural gas (CCF) <sup>e</sup>			

Notes:

<sup>a</sup> Units listed in this table are standard units. Should different units be reported, the Contractor shall clearly label the units being used. The same units shall be used for both the current and previous year values reported.

<sup>b</sup> Electricity shall be reported in kWh, the standard units of electric energy. The standard conversion for kWh to Btu is 3,413 Btu per 1 kWh.

<sup>c</sup> Water is typically billed in thousands of gallons (kgal). However, water should be reported in gallons (gal) on this form.

<sup>d</sup> Steam usage is typically reported in millions of Btus (mmBtu). Other units must be approved by the Property Manager.

<sup>e</sup> Natural gas can be metered/reported in hundreds of cubic feet (CCF). The standard conversion for CCF to Btu is 1,028 Btu per CCF.

2. Total energy and water use for the 12-month (contract) period – Using the most recent 12 months of EUAS data from reporting element 1 above, provide the following comparisons of performance against the targets established in Exhibit 10, Operational Performance Targets):
  - a. Total 12-month building energy used (Btu/GSF) versus the annual energy performance target: Field for Contractor provided for contractor in template.
  - b. Total 12-month building water used (gallons/GSF) versus the annual water performance target: Field for Contractor provided in template.
3. Provide a summary of changes/actions completed over the contract period affecting energy and water efficiency. Include, where possible, an estimate of the resulting impact in terms of energy and/or water savings for the previous 12 months. Estimates may be engineering or measured (meter or BAS supported) estimates.
  - a. Operational changes – to address building/equipment schedule changes, set point changes, equipment/system tune-ups, and similar energy and water intensive system controls and operations settings completed during the contract period. Narrative field provided for Contractor to complete.

- b. Building/equipment changes – to address equipment, systems, or building materials installed and/or replaced during the contract period that would impact energy use such as window replacements, new rooftop units, and building renovation start-up or completion. Narrative field provided for Contractor to complete.
  - c. Occupant behavior changes – to address outcomes from occupant changes such as reductions in frequent or routine overtime utility requests and energy awareness programs. Contractor actions supporting these behavior changes should be highlighted. Narrative field provided for Contractor to complete.
- 4. Recommendations for the next contract period – provide a list of recommended actions that will improve energy and water efficiency that should be considered for the next contract year. Include estimates of outcomes for each recommendation, making use of supporting data and calculations when practical. Recommendations should address each operational efficiency, retrofit projects, and occupant behavior initiatives. Narrative field provided for Contractor to complete.
- 5. Contractor identified projects proposed – provide a summary of the Contractor identified projects that were proposed to GSA during the contract period. Summary for each project identified should include a short description of the project, estimated cost, and estimated impact on building energy and/or water use.
- 6. Overall Contractor assessment of performance – the Contractor will provide an assessment of their overall performance in terms of energy and water efficiency performance. At a minimum, this assessment should address each of the following:
  - a. Energy and water use against the performance targets as measured and reported, as well as against the overall building operating conditions and requirements;
  - b. Actions taken by the Contractor that (significantly) affected energy and water use, and the lessons learned;
  - c. How the Contractor would assess their energy and water efficiency performance and why, and strengths and areas for improvement.

Narrative fields will be provided for the Contractor to complete for each sub-element above.

- 7. Propose and prioritize efficiency measures – develop a list of the top priority actions that should be completed in the next contract year. Each proposed action should include the estimated cost and time to complete, and estimated impact on building energy and/or water use. Narrative field provided for Contractor to complete.

GSA REVIEW AND RESPONSE ELEMENTS – to be completed by the Property Manager in the fields provided

GSA1. GSA Reviewing Official: Field for Property Manager provided in template.

GSA2. Review Contractor annual report: Field for Property Manager provided in template.

GSA3. Confirmation of meeting between Property Manager and Contractor – date, participants, and summary of outcomes. Topics and desired outcomes – agreement on planned actions and energy and water performance targets for the next contract year – are summarized in Attachment 2 (Clarification for Completing the Annual Report on Energy and Water Efficiency): Fields for Property Manager provided in template.

## Attachment 1 – Annual Report on Energy and Water Efficiency Template

CONTRACT INFORMATION – to be completed by Contractor in fields provided

Contract number:

Building number, name and address:

Building 12-month energy performance target: Btu/GSF

Building 12-month water performance target: Gal/GSF

Dates covered in this report:

Report submitted by (name of contractor, and name, email, and phone number of individual responsible for follow-up actions):

Date submitted:

ANNUAL REPORTING ELEMENTS – to be completed by the Contractor in fields provided. Additional guidance on completing these reporting elements is provided in Attachment 2 (Clarification for Completing the Annual Report on Energy and Water Efficiency)

1. Summary of annual use by resource – For each purchased utility resource, provide the total annual use for the last 12 months available from the EUAS. Field for Contractor as shown below is provided in template.

Resource (please note units) <sup>a</sup>	Billing Period (enter dates for the most recent 12 month EUAS billing for the corresponding utility) (format mm/dd/yy – mm/dd/yy)	Yearly Use Current Year	Yearly Use Previous Year
Electricity (kWh) <sup>b</sup>			
Electric demand (kW)			
Water (kgal) <sup>c</sup>			
Steam (mmBtu) <sup>d</sup>			
Natural gas (CCF) <sup>e</sup>			
Notes: <sup>a</sup> Units listed in this table are standard units. Should different units be reported, the Contractor shall clearly label the units being used. The same units shall be used for both the current and previous year values reported. <sup>b</sup> Electricity shall be reported in kWh, the standard units of electric energy. The standard conversion for kWh to Btu is 3,413 Btu per 1 kWh. <sup>c</sup> Water is typically reported in thousands of gallons (kgal). Water may also be reported in gallons (gal). <sup>d</sup> Steam usage is typically reported in millions of Btus (mmBtu). Other units must be approved by the Property Manager. <sup>e</sup> Natural gas can be metered/reported in hundreds of cubic feet (CCF). The standard conversion for CCF to Btu is 1,028 Btu per CCF.			

2. Total energy and water use for the 12-month (contract) period – Using the most recent 12 months of EUAS data from reporting element 1 above, provide the following comparisons of performance against the targets established in Exhibit 10 (Operational Performance Targets):

a. Total 12-month building energy used (Btu/GSF) versus the annual energy performance target:

12-month energy performance target: Btu/GSF

12-month energy use: Btu/GSF

Difference between target and actual use: Btu/GSF

b. Total 12-month building water used (gallons/GSF) versus the annual water performance target:

12-month water performance target: gal/GSF

12-month water use: gal/GSF



Difference between target and actual use: gal/GSF

3. Provide a summary of changes/actions completed over the contract period affecting energy and water efficiency. Include, where possible, an estimate of the resulting impact in terms of energy and/or water savings. Estimates may be engineering or measured (meter or BAS supported) estimates.
  - a. Operational changes – to address building/equipment schedule changes, set point changes, equipment/system tune-ups, and similar energy and water intensive system controls and operations settings completed during the contract period.

Summary:

- b. Building/equipment changes – to address equipment, systems, or building materials installed and/or replaced during the contract period that would impact energy use such as window replacements, new rooftop units, and building renovation start-up or completion.

Summary:

- c. Occupant behavior changes – to address outcomes from occupant changes such as reductions in frequent or routine overtime utility requests and energy awareness programs. Contractor actions supporting these behavior changes should be highlighted.

Summary:

4. Recommendations for the next contract period – provide a list of recommended actions that will improve energy and water efficiency that should be considered for the next contract year. Include estimates of outcomes for each recommendation, making use of supporting data and calculations when practical. Recommendations should address each operational efficiency, retrofit projects, and occupant behavior initiatives

Summary:

5. Contractor identified projects proposed – provide a summary of the Contractor identified projects that were proposed to GSA during the contract period. Summary for each project identified should include a short description of the project, estimated cost, and estimated impact on building energy and/or water use.

Summary:

6. Overall Contractor assessment of performance – the Contractor will provide an assessment of their overall performance in terms of energy and water efficiency performance. At a minimum, this assessment should address each of the following:

- a. Energy and water use against the performance targets as measured and reported, as well as against the overall building operating conditions and requirements.

Summary:

- b. Actions taken by the Contractor that (significantly) affected energy and water use, and the lessons learned.

- c. Summary:

- d. How the Contractor would assess their energy and water efficiency performance and why, and strengths and areas for improvement.

Summary:

7. Propose and prioritize efficiency measures – develop a list of the top priority actions that should be completed in the next contract year. Each proposed action should include the estimated cost and time to complete, and estimated impact on building energy and/or water use.

Summary:

GSA REVIEW AND RESPONSE ELEMENTS – to be completed by the Property Manager in the fields provided

GSA1. GSA Reviewing Official:

GSA2. Date review completed by GSA:

GSA3. Confirmation of meeting between Property Manager and Contractor – date, participants, and summary of outcomes. Topics and desired outcomes – agreement on planned actions and energy and water performance targets for the next contract year – are summarized in Attachment 2 (Clarification for Completing the Annual Report on Energy and Water Efficiency).

Summary:

## Attachment 2 – Clarification for Completing the Annual Report on Energy and Water Efficiency

This attachment provides clarification on the types of information requested in the Annual Report on Energy and Water Efficiency. Entries in this clarification correspond to the numbered elements in the report template.

### CONTRACTOR REPORTING ELEMENTS

- 9 Summary of annual use by resource (i.e., electricity, natural gas, etc.) – complete the table in the reporting template by providing the total resource usage using the most recent 12 months of information available from the EUAS. Note that in cases where the building is connected to the GSA ION EES, the Property Manager and Contractor may agree to use this data instead. (The advantage of the EES data is that the data is available in real-time, while the EUAS data are at least 1 month old before they are available.) Contractors must make sure that the use data is entered in the correct units and that these units are either the default units used in the template or they are clearly called out in the table.
- 10 The total energy use versus the reported 12-month energy use is an important measure of the Contractor's performance in addressing energy and water efficiency. GSA recognizes that throughout the year, there are events that may impact resource use both adversely and positively. For this reason, the outcome of the comparison of actual use to target use is not a pass/fail proposition. GSA will review and take into account the overall efforts of the Contractor and the range of factors that may have impacted the reported 12-month energy and water usage. Attention should be given to the following when completing these comparisons.
  - The Contractor and GSA are in agreement on data that go into the 12-month usage totals for all resources
  - Units of the individual energy resources used must all be converted to Btu before entering the total energy use. The conversions should make use of the conversion factors used by GSA.
- 11 Provide a summary of changes/actions completed over the contract period affecting energy and water efficiency, and provide estimates of their impacts. Changes/actions should be presented for each of the following categories: Operational changes, building/equipment changes, and occupant behavior changes.

Operational changes: Numerous research efforts have reported that building-wide energy savings on the order of 5 to 15% are usually available through better building operations practices. Better yet, many of these changes can also result in improved occupant comfort, increased equipment reliability, and safer operating conditions. For these reasons, GSA encourages its contractors to identify and implement (after approval) these types of measures (e.g. set points).

Measures may address overall operations and maintenance management approaches such as:

- Metered data analysis – periodic, even daily, reviews of whole building and individual major equipment (where available) energy and water use and performance including building load profiles and performance trending.
- Developing approaches for staff to identify and recommend for action, energy and water efficiency measures.
- Providing staff training in building re-tuning, energy auditing and management, water auditing and management, existing building commissioning, BAS operations, and boiler efficiency and operations.

Building/equipment operations typically offer many opportunities to improve savings usually attributed to large energy and water using systems, such as HVAC and lighting. Building/equipment operations strategies and approaches for energy and water efficiency include, but are not limited to, actions focused on scheduling, procedures, and work/systems control and optimization. Examples include ongoing commissioning/building tune-up activities and operations and maintenance best practices procedures identifying and addressing opportunities such as those listed below:

- Revising equipment control sequences
- Reducing equipment runtime
- Improving economizer operations
- Optimizing chilled water supply temperature and differential pressure reset
- Delamping overlit areas such as corridors and offices

Equipment maintenance – how well the Contractor will perform preventive, predictive, scheduled and unscheduled actions to prevent equipment failures or decline in performance with the goal of increasing efficiency, reliability, and safety. Examples might include

- Use of predictive maintenance technologies such as infrared thermography to (help) inspect electrical systems, mechanical systems, roofs, and insulation
- Use of actual equipment runtimes as recorded by the BAS to perform maintenance as needed instead of as scheduled
- Calibration of sensors and actuators

Numerous resources that address the topics above are available at no cost:

- Building re-tuning approach focuses on improving the operations and maintenance of (large) building controls systems. The re-tuning methodology is highly structured to identify and implement

no-cost/low-cost energy savings. For more information visit <http://www.pnnl.gov/buildingretuning/training.stm>

- [\*Impact of E4 Training and Field Auditing of GSA Heartland Facilities\*](#) provides a summary of the measures taken and results realized from a building tune-up effort at multiple GSA buildings.
- GSA offers the Shave Energy program. Ask the Property Manager to contact the Regional Energy Manager to obtain more information through the password-protected Shave Energy website at <https://sites.google.com/a/gsa.gov/national-shave-energy-program/>
- [\*Operations and Maintenance Best Practices – A Guide to Achieving Operational Efficiency \(Release 3.0\)\*](#) outlines best practices that will help building owners and operators implement effective O&M for systems and equipment found at their facilities.

Building/equipment changes may present unique opportunities to realize energy and/or water efficiency improvements. These changes may be driven by the need to replace failed or end-of-life equipment/systems, or simply by the economics where the energy and/or water savings will “pay for” the investment of purchasing and installing the new equipment. In cases where replacement is needed because of failure, unreliable operations, or end of useful life, a replacement approach should take into consideration the efficiency opportunities available because these opportunities will not be available again until the next replacement cycle. It is for this reason that, per Federal regulation, a [life-cycle cost analysis](#) is to be completed as part of the replacement project design. Sites are strongly discouraged from using a like-in-kind replacement approach for replacement and retrofit projects because this approach relies on old and usually inefficient technologies to reduce design costs, and the perception of reduced risk when operating. GSA encourages its contractors to identify and propose replacement and retrofit projects that will improve building operations and result in increased energy and/or water efficiency. Resources available to help identify energy and water efficient products are available through Energy Star® and [FEMP covered products](#).

Occupant behavior changes can also result in significant resource savings. One area that GSA would like to highlight is working with the building tenants to minimize the impact of overtime utility requests. The monthly energy and water efficiency report includes a section to summarize the overtime utility requests for each monthly period. This report section should capture the actions taken by the Contractor to identify and implement related opportunities that were proposed to GSA and/or initiated, such as identification of satellite equipment/systems that provide services only locally and at the tenant’s expense; tenant submetering of utilities for awareness and/or tenant billing (cost allocation); coordination with the tenants on criteria for overtime utility requests; and building-wide energy awareness activities. The outcome for each of these respective actions should be characterized.

- 12 Recommendations for the next contract period – provide a list of recommended actions that will improve energy and water efficiency that should be considered for the next contract year. Include estimates of outcomes for each recommendation, making use of supporting data and calculations when practical. Recommendations should address operational efficiency, retrofit projects (see reporting item 5 below for additional presentation of information for retrofit projects, and occupant behavior initiatives). Examples might include new start-up and shut-down strategies, adjustment of

set-points, building tune-up training and implementation, Shave Energy participation, metered data analysis, overtime utility reduction programs, etc.

- 13 Contractor identified projects proposed – provide a summary list of recommended projects that, based on the Contractor's estimates, can increase the energy and/or water efficiency of the building. These projects may address replacing end-of-life equipment/systems, retrofitting existing equipment/systems based on cost-effectiveness resulting from resource savings (energy, water, and/or staff time), or installing new equipment such as sensors that can support improved systems operations. At a minimum, include the following information for each proposed project: brief description of the project and its intended outcome; equipment/systems being addressed; proposed solution; estimated cost; estimated time to complete the project; estimated savings by resource; and identification of potential risks or installation issues. Background information including potential equipment information, design sketches (if available), and resource savings calculations should be available for GSA if this information is requested.
- 14 Overall Contractor assessment of performance – provide a summary assessment of the Contractor performance that addresses the energy and water efficiency realized in the building for the contract period. This assessment should take into account the building's performance against the established performance targets allowing for consideration given to performance variables such as weather, occupancy including overtime utility requests, major systems condition, and Contractor implemented measures. Contractor implemented measures should be summarized and assessed for their performance against estimates and overall performance. The assessment should also address the Contractor's performance against the measures agreed upon by GSA and the Contractor at the start of the contract period. Include an overall assessment of performance in terms of success, areas/opportunities for improvement, and lessons learned.
- 15 Propose and prioritize efficiency measures for the next contract year – provide in priority order (highest priority first) the efficiency measures that the Contractor proposes for the new contract year. Measures may be operational changes, building/equipment changes, and/or occupant behavior-based action that are intended to cost-effectively support resource efficiency improvement. Include for each proposed action the estimated cost to complete and estimated impact on building resource use. It is recommended that GSA support actions required for action implementation also be listed.

## GSA REVIEW AND RESPONSE ELEMENTS

GSA1. GSA Reviewing Official:

GSA2. Date review completed by GSA:

GSA3. Confirmation of meeting between Property Manager and Contractor – date, participants, and summary of outcomes. This annual reporting process was developed to obtain these key outcomes:

- Review the Contractor's overall performance in supporting and achieving GSA's goals for energy and water efficiency. This review is accomplished by reviewing the overall energy and water use against the established targets, reviewing the actions completed during the contract year, and subjectively assessing the Contractor's overall performance. This is not intended to be a pass/fail exercise, but rather an opportunity for the Contractor and GSA to review and discuss expectations and their associated outcomes.
- Identify and prioritize energy and water efficiency actions to be completed during the next contract year. These measures will be primarily identified by the Contractor in their report recommendations, and through discussions with the Property Manager, which will take into account building plans and needs, tenant concerns, and GSA's estimate of what are reasonable and achievable targets. Outcomes should be an agreement between the Contractor and GSA on the following:
  - A prioritized list of actions to be addressed during the next contract year
  - Revised energy and water performance targets for the next contract year.

An approach to developing revised energy and water performance targets is as follows:

- Review most recent 12-month performance – Btu/GSF and Gal/GSF.
- Identify factors (independent variables) impacting energy and water use over the review period such as space vacancies, tenants moving in, extreme and/or mild weather, major equipment issues and failures, new building equipment and/or materials installed, overtime utility requests. Using estimates subjectively assess the impact of these factors.
- Identify adjustments for planned building activities during the next contract year— scheduled vacancies/move-outs, tenants moving in, planned renovation and retrofit projects, new tenant support requirements, etc.



- Estimate the energy and water use impact resulting from efficiency measures agreed upon by the Contractor and GSA during this annual review. Savings from individual measures should be based on their estimated completion date.
- Baseline consideration that takes into account the building energy and water performance against of other similar buildings. This adjustment recognizes that different buildings have different levels of efficiency opportunities available. For example, buildings achieving an Energy Star® designation (Energy Star® rating of 75 or greater) should, in general, have fewer cost-effective opportunities than building with lower ratings. Buildings may also be compared against other similar GSA buildings as identified.

It is strongly recommended that the Property Manager engage the Regional Energy Coordinator in the annual review, prioritization, and target setting process.

# EXHIBIT 14

## J.14. Qualifications of Electrical Testing Technicians (ETT)

*[[[This exhibit is provided to assist the CO in determining the Contractor's qualifications in H.15.3.8.]]]*

(ANSI/NETA ETT-2010 Standard for Certification of Electrical Testing Technicians)

<b>TITLE:</b>	<b>Trainee Technician</b>	<b>Assistant Technician</b>	<b>Certified Technician</b>	<b>Certified Senior Technician</b>
<b>LEVEL:</b>	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>	<b>Level IV</b>
<b>EDUCATION AND TRAINING:</b>	High School / GED	Safety 40 hours Electrical 160 hours	Safety 24 hours add'l Electrical 240 hours add'l	Safety 40 hours add'l Electrical 200 hours add'l
<b>RELATED EXPERIENCE:</b>	None	Two Years*	Five Years*	Ten Years*
<b>TYPICAL DUTIES:</b>	None	Generally requires direct supervision. Responsible for safety of self. Understands hazardous electrical energy control procedures.	Capable of supervising Levels I and II. Routine and moderately complex projects. Record keeping. Safety of others. Switching. Evaluations.	Supervises large projects, multiple crews. Works independently. More complex investigations, tests, and evaluations.
<b>TYPICAL ACTIVITIES:</b>	Simple assistance. Simple measurements. Test equipment set up and removal. Cleaning.	Assists. Inspects. Tests. Data collection. Test for de-energized locked out/tagged out equipment.	Lockout/Tagout, safety grounding. Test for de-energized medium-voltage equipment. Performs moderately complex tasks. Interacts with other skills and operations.	Corrects system failures. Performs very complex tests. Interacts with engineers and managers. Writes reports.
<b>EXAMINATION:</b>	By employer	By certifying organization 70% minimum score	By certifying organization 70% minimum score	By certifying organization 70 % minimum score

**NOTE: Candidates for Levels II, III, IV must have met the qualifications for all previous levels.**

**\* Completion of two or more years of technical education in an electrical field shall be equivalent to a maximum of one year of experience.**

# EXHIBIT 15

## J.15. Miscellaneous Best Practices

*[[[Since the Regions have the latitude of enhancing the O&M Spec, the following attachments are best practices to be considered by CO and building manger to incorporate into your building O&M specifications. These practices/ procedures have been use in various regions with success in managing and improving our O&M services. It is recommended to contact the POC or supporting web site on this program to become familiar with the program before proceeding.]]]*

**Mechanical Estimating Tool**  
**Commissioning**  
**Shave Energy**  
**Federal High Performance Guiding Principles**

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### Mechanical Estimating Tool

*[[[Note to Spec Writer: If you choose to use this tool to develop your mechanical IGE , see web link: <https://sites.google.com/a/gsa.gov/national-custodial-operations-maintenance-specifications/> contains all the information concerning this tool.]]]*

This automated craft package contains a list of every possible type of equipment that may be in the federal building. The user simply has to enter the quantity of each type of equipment and the program will figure out the man-hours required for tours, watches, service calls and repairs. The tool includes a government estimate. The user just selects their locality from a drop-down list and the program automatically fills in the government estimate based on the man-hours calculated from the other sections of the tool. The user has the ability to enter subcontract information on the estimate if necessary as well as override some specific calculations if applicable. A detailed instruction sheet is included with the tool.

We have found that as long as the user enters an accurate inventory the tool creates an estimate that is within 5% of actual costs. We have been able to significantly reduce some of our contracts based on the resulting estimated created by this tool.

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## **COMMISSIONING**

*[[[For information purposes only refer to Contractor's responsibility in commissioning efforts]]]*

Commissioning for PBS takes several forms, Total Building Commissioning for New and Modernized facilities, Re-Commissioning for facilities that have been commissioned before, Retro-Commissioning for facilities that have not been commissioned before and Ongoing-Commissioning for all facilities through the use of technology and partnering with Operations and Maintenance (O&M) service providers.

**Total Building Commissioning (TBC)** - GSA is responsible for meeting the space requirements of Federal agencies. To ensure a high standard of excellence for the American public, PBS utilizes a Total Building Commissioning Process. Total Building Commissioning is PBS's process for quality delivery in new construction and facility modernization. It is the process for achieving, validating and documenting that the performance of the total building and its systems meet the design intent and requirements of the owner.

**Re/Retro-Commissioning** – GSA's Re/Retro-Commissioning efforts will focus on GSA's "Covered Facilities" (facilities that constitute at least 75% of GSA's energy use) as defined in the Energy Independence and Security Act of 2007 (EISA 2007), as well as a data repository for our Commissioning and Continuous-Commissioning efforts. In GSA's Strategic Sustainability Performance Plan, GSA has committed to re/retro-commission 25% of covered facilities (over 33 million sq ft) each year. The result of these re/retro-commissioning activities will improve the operations, maintenance and energy efficiency of the facilities.

**Ongoing Commissioning** – GSA's Ongoing Commissioning efforts will focus on maintaining the facility in the optimized state resulting from TBC and Re/Retro Commissioning efforts. GSA will achieve this through its relationship with its service providers (Operations and Maintenance/Custodial/Repair and Alterations/IT/Utilities) and the use of technology (networked systems/Advanced Meters/Smart Buildings).

**Benefits of Commissioning for GSA Buildings** - Because all building systems are integrated, a deficiency in one or more components can result in suboptimal operation and performance among other components. Remedying these deficiencies can result in a variety of benefits including:

- Improved building occupant productivity
- Lower utility bills through energy savings
- Increased occupant and owner satisfaction
- Enhanced environmental/health conditions and occupant comfort
- Improved system and equipment function
- Improved building operation and maintenance
- Increased occupant safety
- Better building documentation
- Shortened occupancy transition period
- Significant extension of equipment/systems life cycle

Industry sources indicate that on average the operating costs of a commissioned building range from 8% to 20% below that of a non-commissioned building. Certain available commissioning implementation tools, such as cost shared USDOE Energy Contractors, may even result in a negative capital investment cost. GSA's goal in adopting building commissioning is:

- To safeguard PBS interest, by implementing solutions that best represent and meet the long term efficiency and functionality of all PBS buildings and meet the expectations of GSA's customers
- To improve facility operations
- To optimize the value received for each construction dollar spent
- To improve Indoor Environmental Quality (IEQ) and decrease liability due to IEQ problems

(A) COMMISSIONING.—The term ‘commissioning’, with respect to a facility, means a systematic process—

“(i) of ensuring, using appropriate verification and documentation, during the period beginning on the initial day of the design phase of the facility and ending not earlier than 1 year after the date of completion of construction of the facility, that all facility systems perform interactively in accordance with—

“(I) the design documentation and intent of the facility; and

“(II) the operational needs of the owner of the facility, including preparation of operation personnel;  
and

“(ii) the primary goal of which is to ensure fully functional systems that can be properly operated and maintained during the useful life of the facility.

“(F) *RECOMMISSIONING*.—The term ‘recommissioning’ means a process—

“(i) of commissioning a facility or system beyond the project development and warranty phases of the facility or system; and

“(ii) the primary goal of which is to ensure optimum performance of a facility, in accordance with design or current operating needs, over the useful life of the facility, while meeting building occupancy requirements.

“(G) *RETROCOMMISSIONING*.—The term ‘retro-commissioning’ means a process of commissioning a facility or system that was not commissioned at the time of construction of the facility or system.

# Shave Energy

*[[[Note to Spec Writer: If a region elects to include this language in their Contract they should be aware that there may be some requirements for installing additional equipment and those requirements should be handled outside of the O&M Contract and follow appropriate Contracting guidelines. If included remove exhibit, mark reserved and annotate table of contents. POC: [juanjose.tijero@gsa.gov](mailto:juanjose.tijero@gsa.gov). <https://sites.google.com/a/gsa.gov/national-shave-energy-program/visuals?pli=1>]]]*

The Shave Energy Program is designed to assist field offices to systematically identify and implement simple no cost energy efficiency measures. The primary objective of the program is to identify no cost inefficiencies in operations, make appropriate adjustments, and reduce total energy consumption at participating facilities, on average, by 10% per year. Program participants will use various audit procedures, tools, templates, strategies, educational tools and reference materials to implement a variety of best practices. These include optimizing HVAC & lighting schedules, controls, and equipment, implementing energy- and comfort-optimized thermal set points and lighting levels, demand shedding, and tenant engagement.

Field office personnel will be essential to the success of the program and will be pivotal to reducing cost significantly through no cost means. They will be supported by regional super users and Central Office contract with technical support.

The Miami Service Centers participated in the *unintentional* Shave Energy pilot program last year and the results are very promising. The Service Center, under the leadership of Don Rollins, implemented numerous no cost items into its portfolio and the benefits were profound as they maintained reductions over a one year period.

Over the past year (2011), the Service Center reduced energy consumption by 4,916 BTU/GSF and a 15% reduction in total KWH usage (equivalent to almost 6 million KWH). This reduction is very significant and equivalent to “not using” 161,294 gallons of gas. The cost benefit associated with these reductions is also significant as it reduced total energy cost by \$541,419 in FY11 KWH dollars.

The Wilkie Ferguson facility has also seen phenomenal success on its own as it reduced its usage by 15,369 BTU/GSF over the last year. The property manager reduced total consumption by 3.5 million KWH or 29% over the last year. This reduction is equivalent to “not using” 95,093 gallons of gas or removing 1,521 cars from the road. The cost savings associated with these reductions is \$314,861 in FY11 KWH dollars.

The Pilot Shave Energy Program was expanded to include an additional service center in the fall. After initial walk through and audits of two of its’ facilities, possible annual consumption reductions between 2.8 million and 3.8 million KWH were identified. Again, these reductions would result from “no cost” methods. The potential cost savings is approximately \$250K to \$340K.

The pilot participants are currently vetting the various audit procedures, tools, templates, and strategies with much success.

The Shave Energy Program presents a unique methodology to bridge the gap between the identification of energy-saving opportunities and implementation of energy retrofits by outlining spe-

cific actionable items based on simple operational best practices. Integration of Shave Energy with advanced metering programs will significantly expedite the detection of opportunities for energy reduction through the analysis of building energy consumption.

The success of Shave Energy is dependent on managerial commitment to existing GSA operational standards. In order to maximize the impact of the Shave Energy Program, GSA management must be proactively engaged at the national, regional, field office, and building levels.

The first step is to identify core team members. These core team members will assist in fully developing the program and providing guidance to the national program team. The second step is to make people and buildings available for training and implementation of best practices. This program's training is expected to be 10 hours for regional and field office super users and participating property managers. The audit process is expected to take approximately 24 to 30 hours per facility depending on size. And a strong commitment to implement cost saving measures uncovered during the audits.

In conclusion, it is still feasible to reduce consumption and cost with little or no investment. In these current uncertain fiscal times your commitment and support is fundamental.

### ***C.35.5 Optimal System Performance Standards***

#### ***Schedule Alignment***

One of the easiest ways to reduce energy usage in a building is to ensure that operations such as heating, cooling, and lighting satisfy occupant requirements only during occupied times. The GSA definition of occupancy in the workplace is defined as the times during which at least 75% of all people typically working in the office are present. The Contractor should align all operational schedules to reflect GSA's occupancy definition. Providing heating and cooling services beyond the occupied operational schedule without prior approval of GSA is prohibited unless those services will be required to maintain the facility in accordance to ASHRAE thermal comfort and efficiency standards. All operating schedules must be adjusted seasonally and be approved by GSA every 90 days.

#### ***Unoccupied Heating and Cooling Operations***

During unoccupied times, heating and cooling operations should be shut off, or in climates that require the circulation of mildly conditioned air, their set points set back by (at minimum) 8-10°F (e.g. if the cooling set point is 74°F then an appropriate unoccupied set point would be 84°F). As required by the Federal Management Regulations, heating temperature set points must be no higher than 55°F during non-working hours. When the building is unoccupied, only emergency lighting should remain on inside the building. During times when occupants are filtering in or out of the building at the beginning and end of the day, the air conditioning system can be in the process of ramping up or down because a lower internal load (i.e. body heat and appliance use) exists under these conditions. For more information, see SEP Reference Manual Sections.

#### ***Morning Start-Up and Afternoon Drift***

Depending on the system type and building size and air conditioning load, some systems may take a number of hours to stabilize at the desired heating or cooling set points. The O&M



Contractor should be aware of these start-up times and should operate the equipment schedules based on the observed response and the space occupancy. However, the system start-up response time will also vary by season. For example, GSA would expect a system that takes 2 hours to meet occupied cooling set points in August to take significantly less time to meet these set points in March. The Contractor should adjust the heating and cooling system start-up times seasonally to align the observed stabilized response of the system with the periods of 75% occupancy or greater, keeping in mind that full air conditioning need not be applied during times of lower occupancy.

Many building automation systems have algorithms for optimal start procedures based on the outside air temperature and the load required to reach set points in morning start-up. Where such systems exist, these algorithms should be utilized to minimize start-up energy consumption.

GSA recommends that Contractors shut down or set back equipment in a similar manner. In many buildings, while exact temperature set points may not be upheld, favorable temperatures will be maintained long after equipment have been shut off or set back to unoccupied levels. As occupants leave at the end of the day, cooling loads decrease. For example, if occupants leave the building between 3:30 p.m. and 5:00 p.m., the unoccupied temperature set back can actually be applied at 4:00 or 4:15 and the temperature allowed to slowly drift upwards as people leave the building. In order to determine the appropriate time for shutting down or setting back equipment operations, the Contractor should evaluate the current system capabilities and adjust the systems schedule daily if needed to optimize energy usage while maintaining acceptable levels of comfort.

### ***Heating, Ventilation, and Air Conditioning (HVAC)***

This Section summarizes the best practices for operating heating, ventilation, and air conditioning systems. As the Contractor surveys the building spaces and the associated systems, each of the following practices should be verified and the need for adjustment noted.

#### **Timing of HVAC Adjustments**

Changes to centralized building temperature set points for more efficient operation should be gradual but substantial enough to reduce system inefficiencies. If centralized building temperature set points are required the Contractor should adjust no more than by 2°F per week.

#### **Set Point Control**

ASHRAE Standard 55 for Thermal Comfort identifies acceptable comfort ranges based on humidity and mean outdoor air temperature using a metric of Predicted Percentage Dissatisfied (PPD) to optimize thermal comfort. For most summer climates for which air conditioning is utilized in the United States, acceptable cooling set points range between 74°F and 78°F. Acceptable heating set points range between 68°F and 72°F for most US climates. The Contractor shall operate all GSA conditioned space in accordance to ASHRAE Standard 55 for appropriate space types and all building thermostat dead bands shall be limited to no more than  $\pm 2^\circ\text{F}$ . For example, an appropriate set point and dead band would be  $74^\circ\text{F} \pm 2^\circ\text{F}$  for a cooling environment if the ASHRAE standard acceptable cooling set points range between 74°F and 78°F. An inappropriate set point and dead band would be  $72^\circ\text{F} \pm 2^\circ\text{F}$  or  $74^\circ\text{F} \pm 3^\circ\text{F}$  for a cooling environment if the ASHRAE standard acceptable cooling set points range between 74°F and 78°F.

**Supply Air Temperature Resets**

When outside air temperatures are lower, the building can meet space cooling temperature set points using higher supply air temperature set points. This lowers the energy costs associated with running the cooling system and, in buildings with zonal reheat, this can also prevent the waste of energy through simultaneous heating and cooling. For applicable systems, the Contractor should implement a supply air temperature reset. Where such automation is not possible, Contractors should manually implement this strategy on a seasonal basis. In most climates, discharge air temperature can be reset by about 10°F while maintaining favorable indoor temperatures and reducing energy consumption. Typical discharge air temperature resets range between 50°F and 60°F for cooling.

**Chilled Water and Hot Water Resets**

The prescribed recommendations for the reset of chilled water and heating hot water set points apply only to hydronic systems, in which the heating and cooling sources to the air handler are chilled water and hot water served by chiller(s) and boiler(s) respectively.

Many HVAC system configurations can be programmed to automatically reset the CHW temperature set point in response to building load, similar to supply air temperature reset control, if the system is programmable the Contractor shall automate all configurations. The Contractor should adopt a chilled water reset strategy and implement a temperature control range of 5-10°F. In general the lower limit of the control range should be no less than 42°F and that the upper limit should be no more than 2°F less than the minimum supply air temperature. Where such automation is not possible, Contractors should implement this strategy on a seasonal basis.

Most buildings can be programmed to automatically modulate hot water temperatures in response to building load. The Contractor should implement a hot water reset strategy which decreases the range to which the hot water temperature can be reset; if the system is programmable the Contractor shall automate all configurations. As a rule of thumb, the hot water temperature set point should be no lower than 140°F and no greater than 180°F. For example, if the building is controlling heating hot water temperatures to 170°F, an appropriate reset control strategy would control heating hot water between 140°F and 170°F.

**Static Pressure Resets**

Variable air volume systems typically modulate supply fan speed to maintain a constant duct static pressure. This static pressure set point is designed to overcome all system pressure loss at peak fan airflows. Under partial load conditions, the required airflow is less than the design airflow and a lower duct static pressure is required to meet the load. In order to meet ventilation requirements, the degree to which duct static pressure can be reduced depends on the number of zones, the zone size and maximum occupancy, and the system's air balance. Poorly balanced systems require greater static pressure to ventilate the worst-served zones. The Contractor shall rebalance any poorly balanced zones.

Most air handling units use constant duct static pressure set points around 2" WC. Depending on the building, static pressure may even be reset to below 0.5" WC while maintaining sufficient airflow for heating, cooling, and ventilation. The Contractor should determine the minimum required static pressure to meet ventilation requirements. If adjustment is possible the Contractor shall lower the static pressure until airflow to the worst stops providing adequate ventilation, as required by ASHRAE 62.1 (see next Section). Wherever systems can support it, the Contractor

shall implement a duct static pressure reset control strategy that ranges from the design static pressure to the minimum static pressure required for ventilation.

### **Outside Air Intake**

When buildings are occupied, they are required by law to intake a certain amount of outside air to maintain appropriate indoor air quality. The Contractor must verify that all HVAC systems provide ventilation as required by ASHRAE Standard 62.1 – 2010 every three years through system testing. These reports must be submitted to GSA for approval. The use of TAB reports to verify performance is strictly prohibited. The value to note in verifying the intake of outside air is the combined outdoor air rate, shown in Table 6-1 of ASHRAE 62.1. This may be calculated based on the maximum number of occupants and floor area, as shown in the equation below, or using the default values based on default occupant densities.

$$\text{Required Ventilation (CFM)} = R_p * (\text{Max. \# Occupants}) + R_a * (\text{Floor Area})$$

**Table 1 Selection of ASHRAE Standard 62.1 Table 6-1**

Occupancy Category	People Outdoor Air Rate		Area Outdoor Air Rate		Notes	Default Values			Air Class
	$R_p$		$R_a$			Occupant Density (see Note 4)	Combined Outdoor Air Rate (see Note 5)		
	cfm/person	L/s·person	cfm/ft <sup>2</sup>	L/s·m <sup>2</sup>		#/1000 ft <sup>2</sup> or #/100 m <sup>2</sup>	cfm/person	L/s·person	
Office space	5	2.5	0.06	0.3		5	17	8.5	1
Reception areas	5	2.5	0.06	0.3		30	7	3.5	1
Break rooms	5	2.5	0.06	0.3		25	10	5.1	1
Conference/meeting	5	2.5	0.06	0.3		50	6	3.1	1
Corridors	–	–	0.06	0.3		–			1
Courtrooms	5	2.5	0.06	0.3		70	6	2.9	1
Legislative chambers	5	2.5	0.06	0.3		50	6	3.1	1
Libraries	5	2.5	0.12	0.6		10	17	8.5	1
Lobbies	5	2.5	0.06	0.3		150	5	2.7	1

One Section of the ASHRAE 62.1 Table 6-1 is shown above. The Contractor can access the full document and a comprehensive list on the GSA Shave Energy Google Site. A conservative estimate for the required outside air flow is 20 CFM per occupant. The intake of outside air above minimum requirements can reduce or increase the total cooling energy use, depending on the outside air temperature. If possible, the Contractor shall implement airside economizer control to optimize the intake of outside air for cooling operations. If the minimum outside air intake is greater than required by ASHRAE 62.1, however, then additional energy is required to condition that air to space requirements. As best practice, minimum ventilation rates should be within 100-110% of that required by ASHRAE 62.1.

### Exhaust Fan Control

GSA prohibits running exhaust fans constantly. The Contractor shall adopt an exhaust fan strategy and where possible use sensors to control all exhaust fan systems.

### Placement of Supply and Return Air Diffusers

In order for building spaces to be effectively cooled and heated, the air supplied to each zone must be allowed to distribute and mix with the warmer (for cooling) or cooler (for heating) air in these spaces. If supply and return diffusers are placed too close to each other, then air flow will be short-circuited and conditioned air will be returned without effectively conditioning the space. The Contractor shall verify that all supply and return air diffusers are placed no less than 5 feet apart. The O&M Contractors shall re-distribute the supply and return air connections when necessary and feasible.

### C.35.6 Demand Response Strategies

If GSA has a Demand Response Strategy in place the Contractor shall operate the facility in accordance to that strategy. In addition, any strategies that can be adopted on a normal routine should be adopted as standard daily practice. Any strategy that can temporarily decrease energy consumption (e.g. lighting reduction, where applicable) should be applied during high-rate demand response events and were feasible daily. The Contractor shall maximize demand reduction strategies during high-rate periods.

## Lighting and Lighting Controls

The Contractor shall remove or replace lighting fixtures and bulbs with more efficient equivalent alternatives when available when those alternatives can be procured at the same market cost. It is important to note that these investments in time pay off on their end as well because in the future they'll need to replace fewer bulbs less often. If such an alternative more efficient product is available at the request of the government the Contractor is required to use them if the payback is less than three-fourths of the Contract period or less than eighteen months whichever is less. In addition, if an appropriate lighting efficiency strategy is identified at the facility the Contractor, shall support the effort if there is no undue burden placed upon the Contractor (e.g. a de-lamping 2 hours per week over a specified amount of time).

## Acceptable Levels of Luminance

Section 6.3 in the P100 specifies interior lighting requirements, which must be realized at work surfaces or a height of 30 inches by the combination of ambient lighting fixtures, task lighting, and ambient daylight. These standards should be interpreted as guidelines for appropriate lighting levels - as in actual application, these levels will vary throughout the space. The below guidelines recommended minimum and maximum values for luminance for most GSA space types. These are to be realized at working surfaces by a combination of installed lighting fixtures, task lighting, and daylight.

**Table 2 Acceptable Levels of Luminance**

<b>Area/Activity</b>	<b>Guideline Average Illuminance (foot candles)</b>	<b>Recommended Minimum Illuminance (foot candles)</b>	<b>Recommended Maximum Illuminance (foot candles)</b>
<b>Parking lot</b>	N/A	.1	5
<b>Elevator</b>	N/A	5	10
<b>Inactive storage</b>	5	5	10
<b>Active storage</b>	10	5	15
<b>Stairs</b>	10	10	15
<b>Restroom</b>	10	10	20
<b>Corridor</b>	10	10	30
<b>Dining area</b>	10	10	30
<b>Lounge</b>	10	10	30
<b>Atrium</b>	10	10	30
<b>Lobby</b>	10	10	30
<b>Elec./Mech/Tech. room</b>	30	20	40
<b>Enclosed office</b>	30	20	50
<b>Open office</b>	30	30	50
<b>Conference</b>	30	30	50
<b>Classroom</b>	30	30	50

The U.S. Courts Design Guide derives required levels of illumination from IESNA standards, as shown below. These have also been coupled with recommended minimum and maximum values for space luminance.

**Table 3 U.S. Court Facilities – Acceptable Levels of Luminance**

<b>Area/Activity</b>	<b>Guideline Average</b>	<b>Recommended</b>	<b>Recommended</b>
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	<b>Illuminance (foot candles)</b>	<b>Minimum Illuminance (foot candles)</b>	<b>Maximum Illuminance (foot candles)</b>
<b>Public seating</b>	10	10	20
<b>Supplies and storage</b>	20	10	30
<b>Attorney witness table</b>	30	30	50
<b>Witness box</b>	30	30	50
<b>News media room</b>	30	30	50
<b>Attorney work room</b>	30	30	50
<b>Attorney witness room</b>	30	30	50
<b>Jury assembly suite</b>	30	30	50
<b>Trial jury suite</b>	30	30	50
<b>Grand jury suite</b>	30	30	50
<b>Central court libraries</b>	30-50	30	50
<b>Judges chamber suites</b>	30-50	30	50
<b>Judge's bench</b>	50	40	60
<b>Bailiff</b>	50	40	60
<b>Interpreter</b>	50	40	60
<b>Court reporter</b>	50	40	60
<b>Jury box</b>	50	40	60

The recommended levels of luminance should be provided for each space and over lit spaces should be reduced in electrical lighting by one of the following lighting reduction measures.

#### **Removal and Relocation of Fixtures**

Where excessive lighting exists, the simplest measure to reduce lighting energy consumption is to remove some of the fixtures that serve that area. Where over lit spaces can output favorable lighting levels using fewer of the existing installed fixtures, determine the minimum number of fixtures required to meet the desired level of luminance. Remove the unnecessary lighting fixtures and rearrange them to effectively distribute luminance throughout the space. A multiple period plan should be developed and submitted to GSA if removal or relocation of fixtures is warranted.

#### **Removal of Lamps (De-lamping)**

Where the distribution of lighting fixtures is appropriate, yet lighting levels are higher than needed, one option for reducing lighting energy is to remove lamps from the existing fixtures. For example, if a room with excessive lighting has six fixtures with three lamps per fixture, an acceptable solution could be to remove the center lamp from each fixture in order to maintain fixture symmetry yet reduce the lighting energy by 33%.

#### **Replacement of Lamps/Fixtures**

Many buildings were installed with fixtures and lamps that are grossly inefficient compared to modern lighting technology. Furthermore, newer induction, CFL and LED technologies last longer and require replacement less often than older, inefficient lamps. As these lamps burn out, they should be replaced with more efficient lamps, and where necessary, fixtures should be replaced. To maintain aesthetic consistency, a plan to replace the lamps or fixtures for an entire zone over time should be submitted to GSA for approval. For more information regarding appropriate efficient lighting technologies, see GSA Standards Related to Shave Energy and the P100 Facilities Standards for the Public Buildings Service.

#### **Re-ballasting fixtures**

Re-ballasting fixtures can be an effective method for reducing the energy consumption of lighting fixtures or increasing their total lifetime. Ballasts regulate the amount of electrical current available to a lighting fixture. When older, more inefficient, ballasts are in place and expire the Contractor shall replace them with more efficient technology. When lighting fixtures are replaced and/or existing ballasts are incompatible with the installed lighting, the Contractor must ensure that the ballast is installed to the light bulb specifications. Improper ballasting severely reduces lamp life and incurs additional maintenance and repair costs. For spaces in which dimming capabilities are desired, such as for photocell control, install dimmable ballasts to regulate the electrical current to the light bulbs.

### **Occupancy Control**

Occupancy controls have become significantly more economical in recent years, and are proven to significantly reduce energy by allowing lighting to turn on only when spaces are occupied. They can be applied to any building interior space or parking structure. Depending on the layout and use for each space, the Contractor should choose (a combination of) specific sensor types found below when current lighting controls fail or require replacement:

- Wall-Mounted Sensors
- Ceiling-Mounted Sensors
- Bi-Level Sensors
- Passive Infrared (PIR)
- Ultrasonic
- Dual Technology

### **Daylight Control**

Many office spaces maintain high levels of luminance during the day through windows and skylights and require no electrical lighting during most occupied hours. In some places, lighting fixtures can simply be removed where they are not unnecessary. In places where electrical lighting is only required during some hours, however, one of two strategies should be employed by the Contractor if appropriate systems are in place to allow the lights to come on only when needed:

**Photocell Sensors:** Measures luminance and interacts with the fixtures or BAS to control area lighting by switching lights on and off or by electronic dimming. The sensor sensitivity is adjustable.

**Timer Switches:** Timers interact with the fixtures directly or through the BAS to control area lighting based on the time of day.

### **Lighting Demand Response**

Lighting reductions may also be utilized as a measure for demand response. For buildings that incur demand charges and where systems are in place, implement a continuous dimming or stepped lighting reduction demand response strategy during the peak demand period. From standard lighting levels, dim lighting by 20%, 40%, and 60% for zones with no daylight, low daylight, and high daylight respectively without occupant impact – assuming that the dimming takes place over the matter of minutes – GSA recommends at 1% per minute. With prior GSA approval lighting can be reduced up to 60% across the board during the worst demand response.

Stepped lighting reductions require stepped dimming lighting control or a wiring configuration that supports turning only some lights off. During peak demand periods, reduce the stepped lighting output or the number of lights served.

## **Federal High Performance Guiding Principles**

*[[[Note to Spec Writer: If a region elects to include this language in their Contract they should be aware that there may be some requirements for installing additional equipment and those requirements should be handled outside of the O&M Contract and follow appropriate Contracting guidelines. If included, remove from exhibit, mark reserved and annotate table of contents]]]*

### ***C.35.7 - Performance Measurement - Building Automation System (GP4.3a)***

A BAS supports ongoing accountability and optimization of the building energy performance, and helps building engineers to efficiently operate GSA assets.

The BAS must monitor and control the major building systems, including at minimum, heating, cooling, ventilation exterior and interior lighting, if a preexisting BAS is in place. Operating in manual or non-automated modes is strictly prohibited. Altering any building system that is, was, or previously has been automated or controlled by the BAS or similar control system is prohibited and is grounds for Contract termination or penalty. Lighting may be controlled by the BAS or by time clocks, occupancy sensors, or photocells. Critical spaces include all spaces within the building except for storage closets and mechanical closets. All regularly occupied spaces, stairwells, lobbies, and corridors are considered to be critical spaces and therefore must have automatic controls in place if applicable.

All critical sensors should be calibrated annually to ensure accurate readings and control points. When used effectively, a BAS allows building engineers and management to make informed decisions regarding changes in building operations and energy saving investments.

The Contractor shall record the Base Building Systems Control and BAS Operating Capabilities in the GSA Sustainable Operations and Maintenance Tool. The Contractor shall develop a maintenance plan for all zone level sensors and actuators using GSA's "Zone Level Sensor Maintenance Plan Template and Sample." The maintenance plan must demonstrate that zone level sensors and actuators will be calibrated according to the manufacturer recommended intervals to ensure sensor and actuator accuracy and precision and proper operation of the overall systems. The plan must also demonstrate that any malfunctioning zone level sensors and actuators will be repaired or replaced. At a minimum, the maintenance plan must include the following zone level sensors and actuators:

- Terminal unit damper
- Terminal unit flow sensor
- Space temperature sensors
- Space humidity sensors (if applicable at the facility)
- Zone CO2 sensors (if applicable at the facility)
- Calibrate all system level sensors and actuators annually

The Contractor shall maintain zone level sensors and actuators according to the Zone Level Sensors Maintenance Plan. Ensure the standard operating procedure for responding to comfort calls includes calibration/verification of zone level sensors and actuators as applicable to the facility. The Contractor shall check temperature set points and resets annually, record changes to set points, programming, and schedules, set up trends so that unusual equipment operation can be



identified and corrected, annually provide GSA a Calibration and Testing Report. The Contractor shall operate the facility in accordance to the Federal High Performance Guiding Principles 3.1 Performance Measurement - Building Automation System as outlined in the GSA Sustainable Operations and Maintenance Tool and Reference Guide. The Contractor shall provide GSA documentation to support compliance to the Federal High Performance Guiding Principles 3.1 Performance Measurement - Building Automation System as outlined in the GSA Sustainable Operations and Maintenance Tool and Reference Guide. The Contractor shall provide GSA a schematic of the floor layout showing automated lighting controls.

If no BAS system is in place or limited control the Contractor shall operate the GSA asset in accordance to the GSA GP3.3b - (EQc2.2) - Controllability of Systems – Lighting requirements. The contractor will confirm that the facility provides automated lighting controls (occupancy/vacancy sensors with manual-off capacity) for appropriate spaces including restrooms, conference and meeting rooms, employee lunch and break rooms, training classrooms and offices. **Provide GSA a schematic of the floor layout showing automated lighting controls**

***Benchmarking, Energy and GHG Performance (GP 2.1a, 2.3, 2.4, 2.5)***

GSA utilizes EPA's Energy Star Portfolio Manager (ESPM) as a tool to allow buildings to directly compare their observed energy consumption to a database of national energy data, and to establish a building energy performance rating accordingly. The facility's ESPM will be shared with the Contractor in a read only view.

GSA's Energy Star Rating goal is an Energy Star Rating of at least 75 or be 19th percentile points above the national average energy usage intensity. GSA centrally maintains all energy use for its buildings centrally and that data is uploaded to Energy Star on or about the 20th of each month.

The Contractor shall annually review the space information and building profile in the facility's ESPM account for accuracy and report to GSA an inaccuracy. The Contractor shall not update, alter, or change any utility data or entries. Support GSA in efforts of documenting compliance for an Energy Star Label. Operate the facility in accordance to the Energy Star PE Guide standards. Calibrate meters in accordance to the GSA Sustainable Operations and Maintenance Tool and Reference Guide. Operate the facility in accordance to the Federal High Performance Guiding Principles 2.1a, 2.3, 2.4, & 2.5 Energy and GHG Performance as outlined in the GSA Sustainable Operations and Maintenance Tool and Reference Guide. Provide GSA documentation to support compliance to the Federal High Performance Guiding Principles 2.1a, 2.3, 2.4, & 2.5 Energy and GHG Performance as outlined in the GSA Sustainable Operations and Maintenance Tool and Reference Guide.

**BP 1 - ASHRAE 62.1-2007**

To ensure that the facility is adequately ventilated with outside air (OA) the GSA has adopted the ASHRAE 62.1-2007 standards. Facilities with naturally ventilated systems (i.e. no mechanical ventilation) are not required to document compliance to the ASHRAE 62.1-2007 standard. An alternative standard can be used at GSA's discretion.

The Contractor shall annually document that all mechanical ventilation systems are meeting ventilation requirements of ASHRAE 62.1-2007. Any air handlers (AHU) that are physically not able to meet these standards must provide at least 10 CFM/person of outside air. The Contractor shall annually document proper function of all dedicated exhaust systems and operate the facility in accordance to the Federal High Performance Guiding Principles 4.1 Outside Air Ventilation & Indoor Air Quality Best Management Practices as outlined in the GSA Sustainable Operations and Maintenance Tool and Reference Guide. The Contract shall operate all heating and cooling systems and equipment in accordance the Shave Energy program standards, best practices, training, and reference guides. The Contractor shall provide GSA documentation to support the Federal High Performance Guiding Principles 4.1 Outside Air Ventilation & Indoor Air Quality Best Management Practices as outlined in the GSA Sustainable Operations and Maintenance Tool and Reference Guide.

Besides the aforementioned lighting and HVAC efficiency measures, there are a great number of other no cost efficiency measures that can easily be implemented into building operation. The following list demonstrates a number of additional strategies the Contractor should adopt if appropriate and feasible at the GSA facility:

- Timer control for, or removal of, water fountain cooling systems
- Keypad access to freight elevators
- Smart programming for elevator operation (automated, timer, BAS, sleep mode)
- Extended elevator door close operation
- LED lighting for elevators, stairs, exterior, flood lighting
- Weather stripping of doors and windows
- Plug standby load controllers (timer, occupancy)
- Dynamic modification of BAS equipment schedules
- Additional strategies can be found in the National Energy Efficiency Best Practices Study.

# **EXHIBIT 16**

## **J.15. INVENTORY/CMMS**



Exhibit 15 N-CMMS  
Equip Temp

# **EXHIBIT 17**

## **J.16. PREVENTIVE MAINTENANCE SCHEDULE**



GSA PM Guide Final  
Rev 3

Per Section C.35.2 Maintenance Standard refer to Public Buildings Service Operations and Maintenance Standards 2012 (PM Guide).

# EXHIBIT 18

[[[If this function is performed under a separate Contract, delete.]]]

## J.17. Solid Waste and Recycling Report

Solid Waste and Recycling Report									
Building #		Building Name							
Building Address									
Contractor Name		Contractor Phone #							
Submission Date									
RECYCLING									
Description	Outside Container Volume/Size	Number of Containers	Pick-up Frequency	Total Volume	Conversion Factor	Total Weight (tons)	Per Ton Recycling Fee	Total Cost	Recycler Name
TOTAL									
WASTE									
	Outside Container Volume/Size	Number of Containers	Pick-up Frequency	Total Volume	Conversion Factor	Total Weight (tons)	Per Ton Tipping Fee	Total Cost	Hauler Name
TOTAL									

Conversion Source(s):  
HOW TO FILL OUT THE FORM:

1. Report all recyclables. For source separated recycling, provide weight for each type of material recycled. For commingled recycling, provide total weight for the mixed recyclable materials. Specify when items are composted.
2. All fields must be filled out.
3. Provide actual weight whenever possible. If actual weight is not available use standard Volume-to-Weight Conversion Factors for calculation. Allowances shall be made and reported for volumes that are not filled to capacity (i.e. half full, 3/4 full, etc.)
4. Pick-Up Frequency: Based on monthly activity (e.g. once a week = 4, twice a week = 8, etc.)
5. Indicate conversion factor source(s).

Solid Waste and Recycling Report									
Building #	1XXLER	Building Name	The Citizens CH						
Building Address	123 American Blvd, Fun Town, USA								
Contractor Name	The Best Company	Contractor Phone #	555-121-6583						
Submission Date	Nov 15, 2010								
RECYCLING									
Description	Outside Container Volume/Size	Number of Containers	Pick-up Frequency	Total Volume	Conversion Factor	Total Weight (tons)	Per Ton Recycling Fee	Total Cost	Recycler Name
Commingled (mixed paper, cardboard, plastic)	8 cubic yard	4	4	128	1000	64	\$20.00	\$1,280.00	Green Company
Aluminum Cans (Compacted)	6 cubic yard	2	8	96	430	20.64	\$0.00	\$0.00	Green Company 2
Glass	3 Cubic yard	1	2	6	600	1.8	\$30.00	\$54.00	Green Company 2
Food Waste Scrap	55 gal Drums	5	2	550	412	113.3	\$18.00	\$2,039.40	Green Company
Wood Waste	20 cubic yard	2	4	160	40	3.2	\$10.00	\$32.00	Green Company
Yard Waste Composted	4 cubic yard	2	4	32	1500	24	\$50.00	\$1,200.00	Green Company
<b>TOTAL</b>		16	24	972		226.94		\$4,605.40	
WASTE									
	Outside Container Volume/Size	Number of Containers	Pick-up Frequency	Total Volume	Conversion Factor	Total Weight (tons)	Per Ton Tipping Fee	Total Cost	Hauler Name
	30 cubic yard roll off	3	4	360	1000	180.00	\$85.00	\$15,300.00	Waste Hauler 1
	20 cubic yard roll off	1	4	80	600	24.00	\$79.00	\$1,896.00	Waste Hauler 1
<b>TOTAL</b>		4	8	440	1600	204.00	\$164.00	\$17,196.00	

Conversion Source: EPA's Standard Volume-to-Weight Conversion Factors

([http://www.epa.gov/epawaste/conserve/tools/recmeas/docs/guide\\_b.pdf](http://www.epa.gov/epawaste/conserve/tools/recmeas/docs/guide_b.pdf))

#### HOW TO FILL OUT THE FORM:

1. Report all recyclables. For source separated recycling, provide weight for each type of material recycled. For commingled recycling, provide total weight for the mixed recyclable materials. Specify when items are composted.
2. All fields must be filled out.
3. Provide actual weight whenever possible. \*\* When actual weight is not available, use standard Volume-to-Weight Conversion Factors for calculation. Allowances shall be made and reported for volumes that are not filled to capacity (i.e. half full, 3/4 full, etc.).
4. Pick Up Frequency: Based on monthly activity (e.g. once a week= 4, twice a week = 8, etc.)
5. Indicate conversion factor source(s).

## EXHIBIT 19

# KEY SUSTAINABLE PRODUCT (KSP) STANDARDS AND RECOMMENDED SUBMITTALS

NOTE TO SPEC WRITER: THE CONTRACTOR SHALL SUBMIT THE RECOMMENDED SUBMITTALS TO THE CO  
OR DESIGNEE EACH YEAR BEFORE START OF PERFORMANCE AND INCLUDE THE BRAND NAME AND  
PRODUCT THAT MEETS THE APPLICABLE KSP STANDARDS LISTED BELOW.

Product	Sustainability Standard	Recommended Submittal
Nylon Carpet	10% post-consumer recovered content, NSF 140 Gold level	Product literature showing certification of recovered content by reputable 3 <sup>rd</sup> party
Interior Paint	Standard: $\leq 50$ g/L VOCs, including color- ants added at the point of sale (SCAQMD Rule 1113 standard)	Product literature showing certification of recovered content by reputable 3 <sup>rd</sup> party or Green Seal logo
Gypsum Board	Greenguard Gold certification <i>or</i> 0 g/L VOCs, $\geq 80\%$ recycled content	Product literature showing certification of recovered content by reputable 3 <sup>rd</sup> party or Green Seal logo
Acoustical Ceiling Tiles	California Section 01350 standard for low- VOC materials, total recycled content $\geq$ 20%, recyclable in a closed loop process, USDA Certified BioPreferred; and Environmental Product Declaration (EPD)	Product sheet showing logos of applicable standards
Concrete (Ready- Mix and Site-Mix)	Recycled content in the form of; $\geq 25\%$ fly ash or $\geq 15\%$ ground granulated blast- furnace (GGBF) slag	Product sheet showing logo of applicable standard

**EVALUATION FACTORS FOR AWARD**

**RESERVED**